East Lothian Council

Members' Library Service Request Form

Date of Document	01/09/23
Originator	Ian Lennock
Originator's Ref (if any)	
Document Title	EV Infrastructure Strategy

Please indicate if access to the document is to be "unrestricted" or "restricted", with regard to the terms of the Local Government (Access to Information) Act 1985.

Unrestricted	☒	Restricted	☐

If the document is "restricted", please state on what grounds (click on grey area for drop-down menu):

For Publication

Additional information:

Authorised By	Douglas Proudfoot
Designation	Exec Director for Place
Date	01/09/23

For Office Use Only:	
Library Reference	92/23
Date Received	01/09/23
Bulletin	Sep 23

East Lothian Council

REPORT TO: Members' Library Service

MEETING DATE:

BY: Executive Director for Place

SUBJECT: EV Infrastructure Strategy

---

1 PURPOSE

1.1 The purpose of this report is to provide Members with additional information to the EV Infrastructure Strategy report to be presented to Cabinet on 12th September 2023.

2 RECOMMENDATIONS

2.1 That Elected Members note the content of the report and attachments.

3 BACKGROUND

3.1 East Lothian Council (ELC) currently owns and operates a large and well-rounded portfolio of public Electric Vehicle Infrastructure (EVI). To-date, this network has been funded primarily through central government grant-funding but, as the level of private investment in the sector grows, future grant-funding is expected to be focused on more commercial models with lower subsidy, before being phased out. Nevertheless, the requirement to expand the network remains, as the number of electric vehicles in the region continues to grow, particularly as those without a safe place to park and charge at home switch to electric modes of transport.

3.2 ELC commissioned not-for-profit transport infrastructure consultancy Cenex to work with us to consider what alternative delivery models are available that will allow for the continual and sustainable operation, maintenance, and expansion of the network. Cenex similarly advises the UK government.

3.2 A range of commercial arrangements and funding options were analysed. These options were weighted and scored for our portfolio of EVI (which includes On-street, Destination and Journey chargers) and different

aspects of their installation (above and below ground), operation and maintenance.

3.3 A report will be presented to ELC Cabinet on 12th September 2023 and the attachments to this Members' Library Service report provide a detailed breakdown of that report.

4 POLICY IMPLICATIONS

4.1 None

5 INTEGRATED IMPACT ASSESSMENT

5.1 The subject of this report does not affect the wellbeing of the community or have a significant impact on equality, the environment or economy.

6 RESOURCE IMPLICATIONS

6.1 Financial - The proposal is likely to generate sufficient income to support the maintenance and future roll-out of vehicle charging infrastructure, and as such has no negative impact on financial resources.

6.2 Personnel - Additional resource required, to be resourced from a mix of 100% grant funding for specific short term projects and from income generated for longer term appointments.

6.3 Other – None

7 BACKGROUND PAPERS

7.1 This report and the attached appendices provides background to a report to Cabinet on 12th September 2023.

Appendices 1 – 4 (attached)

AUTHOR'S NAME	Ian Lennock
DESIGNATION	Roads Asset and Regulatory Manager
CONTACT INFO	01620 827297
DATE	01/09/2023

Appendix 1

Lowering your emissions
through innovation in transport
and energy infrastructure

REPORT

East Lothian Council
Options Appraisal v1.0

11th January 2023

Prepared for:

Ryan Robertson
EV Infrastructure and Roads Assets Officer
East Lothian Council
rrobertson@eastlothian.gov.uk

Prepared by:

Benedict Harrison
Sustainable Energy and Transport Consultant

Approved by:

Chris Rimmer
Deputy Head of Department
Energy Systems & Infrastructure

Company Details

Cenex Consultancy Services Limited
Holywell Building
Holywell Park
Ashby Road
Loughborough
Leicestershire
LE11 3UZ

Registered in England No. 12370236

Tel: 01509 642 500
Email: info@cenex.co.uk
Website: www.cenex.co.uk

Terms and Conditions

Document Revisions

No.	Details	Date
1	Report outline	10 Nov 2022
2	Initial content	14 Nov 2022
3	Internal review	17 Nov 2022
4	Updates from internal review	21 Nov 2022
5	Updates from client feedback	16 December 2022
6	Final version for distribution	11 January 2023

Contents

Executive Summary

Background

East Lothian Council (ELC) currently own and operate a large and varied portfolio of Electric Vehicle Infrastructure (EVI). This is a UK-leading network that provides 2.96 kW of simultaneous charging capacity per EV registered in the region. To-date, this network has been funded primarily through central government grant-funding. As the level of private investment in the sector grows, grant-funding is expected to be focused on more commercial models with lower subsidy, before being phased out. However, there is still a requirement to expand the network as the number of Electric Vehicles (EVs) in the region continues to grow, particularly as those without a safe place to park and charge at home switch to EVs.

ELC are looking to understand alternative delivery models that are available to them that will allow for the continual and sustainable operation, maintenance, and expansion of the network but with less reliance on dwindling grant-funding.

Process

To understand the different options that are available to ELC, a range of commercial arrangements and funding options were analysed. These options were weighted and scored for different types of EVI (On-street, Destination and Journey) and aspects of their installation (above ground and below ground) operation and maintenance. This analysis produced a shortlist of five options that were analysed across aspects such as investment, control, responsibility, risk and revenue for existing and future EVI:

- *Do Nothing*;
- *Own and Operate*;
- *Part-Sell Estate*;
- *Leverage Estate*; and
- *Fully-sell Estate*.

The main considerations for ELC are the level of control that is required around the choice of locations for EVI, end-user tariffs and the level of internal investment required. There is a focus on On-street and Destination EVI, rather than on Journey chargepoints. This is because these types of chargepoints are most required to ensure equitable access to EVI. This is because they tend to have lower tariffs, and therefore can help to ensure that those drivers who do not have a safe place to park and charge at home, have affordable re-fuelling options.

Recommendation

By comparing the options with ELC's strategic priorities, a recommended option was identified that is most likely to deliver accessible and equitable charging, reduce public investment, secure long-term revenue, define a clear role for ELC and manage the Council's risks effectively.

Leverage Estate was selected as the preferred option which best fulfilled these criteria.

This option uses the comprehensive existing ELC owned and operated network of EVI and the energy purchasing power of ELC as a lever in tender and contractual negotiations to secure an attractive partnership with at least two private organisations. These partnerships will allow private investment to support the continual roll-out of EVI while still making use of any central government grant-funding (as a preferred source of subsidy) and additionally any surplus revenue to invest in grid connections and resourcing. This reduces long term reliance on grant-funding but allows for a degree of control to be held by ELC which should support ELC's vision for its EVI network.

Implications

The implications of the *Leverage Estate* option were explored and analysed, with the following specific recommendations being made:

Area	Recommendation
Procurement	• ELC let a Public-Private Commercial Partnership (PPCP) contract with (i) an External Operator element for existing EVI and, (ii) a Concession element for future EVI. • A competitive tender process be used rather than direct or follow-on award. • ELC should secure the ability to break the contract in the event of poor equitability outcomes and/or have the unhindered ability to contract other suppliers to fill any gaps. • At least two suppliers be procured who can both handle a diverse portfolio of On-Street, Destination and Journey chargepoints. • ELC include conditions in the contract that enable it to deploy (preferably externally-funded) EVI without constraint.
Regulation	• ELC ensure that all hardware and software comply with the relevant regulations detailed in the body of the report, on top of the established minimum technical standards.
Contracts	• A contract duration of seven years be targeted, following discussion with potential suppliers in pre-tender market engagement activities. • This could be in the form of 5+2+2 years which gives ELC one option to exit from the contract early and one option to extend. • A transparent revenue-share model is adopted and profit-share is avoided. • ELC retains responsibility for any planning approvals, grid connection, groundworks from grid connection to feeder cabinet, feeder cabinet and meter, groundworks to chargepoints, and electricity purchase at any new sites. • The supplier be offered the opportunity to take responsibility for groundworks to chargepoints, chargepoint installation, operations, insurance, customer service, and decommissioning. • ELC control technical specifications, locations, electricity supply and tariff pricing principles.
Governance	• A range of SLAs be incorporated into the contract to hold the partner organisation to account (see detail in the body of the report) • A range of KPIs be deployed to quantify the quality of the project and show if changes need to be made to the programme (see detail in the body of the report)
Programme	• ELC manage the major risks identified with this approach: electricity prices, inability to secure private investment, lack of commercial interest in bidding, sole commercial partner withdrawal, lack of key ELC resourcing. • A range of roles are identified or resourced in the council to deliver the programme.

To deliver this, a phased project plan is proposed to guide ELC through the delivery of these recommendations.

1. Introduction

1.1. Introduction to the project

A diverse and successful portfolio of Electric Vehicle Infrastructure (EVI) is present within East Lothian. To-date, the EVI estate has been funded by a range of Scottish and UK Government capital grant-funding with a small amount contributed directly by East Lothian Council (ELC) and private capital. Operational and maintenance funding varies in structure, scope and duration across the different assets, including from private sources and charging payment revenue.

As a result, the council is in the top-five Local Authorities (LAs) outside London for the proportion of residents within a five-minute walk of a public chargepoint before even considering the projects that they have secured external funding for and are currently in the process of deploying: [1]

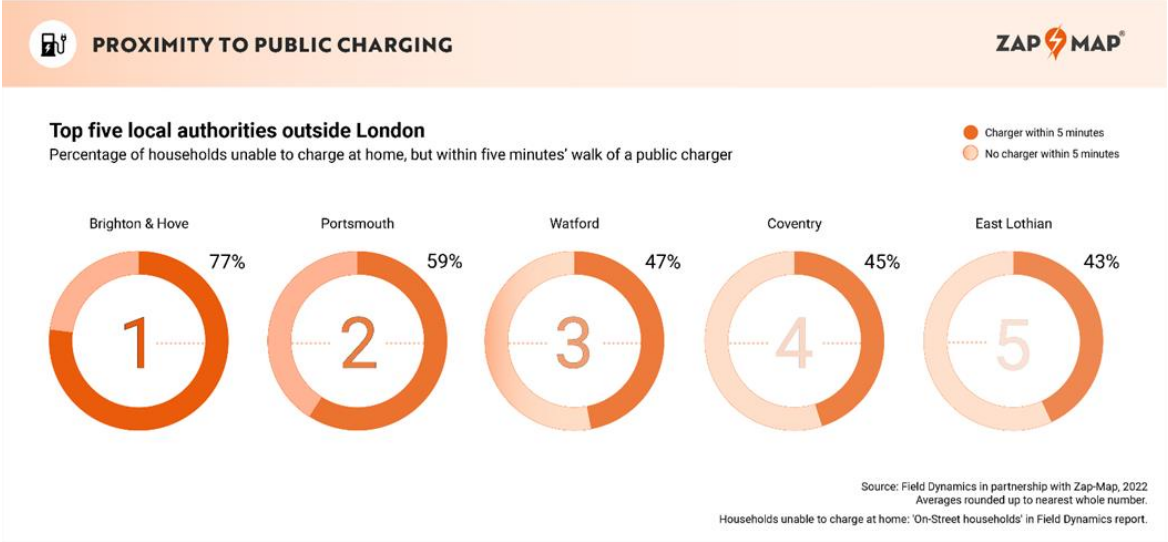


Figure 1: Proximity to public charging

The Scottish Government has announced its intention to disperse further support via Transport Scotland's Electric Vehicle Infrastructure Fund (EVIF) which currently stands alongside the UK's nationwide On-street Residential Charging Scheme (ORCS - although this may end relatively soon).

This opens the possibility that further chargepoints will be deployed in East Lothian using partial grant-funding, building on the Council's successes to-date. This deployment must be done in a way which ensures best value for money, fulfils ELC's EV Strategy and secures long-term financial sustainability.

Therefore, alternative models for existing and new infrastructure should be explored, especially in-light of both central and devolved Governments' requirement for LAs to secure private investment as match-funding. Alternatively, a *Do Nothing* approach might be adopted (foregoing any available grant-funding) until such time as the market is sufficiently mature to support private-only deployments.

Cenex has conducted this appraisal to facilitate ELC's approach to the available tranches of funding and support its ongoing leadership in the zero-emission vehicle mobility arena.

1.2. Navigation

Key conclusions, recommendations or takeaways are highlighted like this.

! Important notes are highlighted like this.

Case studies are highlighted like this.

[1] https://www.field-dynamics.co.uk/research/inconsistencies-in-local-authorities-ev-charging-approach/ accessed 25th Nov 2022.

2. Current Status

In order to analyse the impact that different delivery models might have on current and new EVI, the current estate must be understood. This section presents a summary of the current status of the ELC owned EVI.

It is also important to understand that there is private EVI in operation in East Lothian alongside that which is owned and operated by ELC. There are multiple private CPOs that operate across the destination and Journey charging space, these charging types are described in the following sections. This report focuses on the ELC network of EVI so will not go into detail on the private EVI currently in operation.

2.1. Types of chargepoints

ELC has a variety of different types of EVI deployed in different scenarios across the region. The type of EVI have been described locally as On-street, Destination and Journey chargepoints.

2.1.1. On-Street

On-street chargepoints are all standard 7 kW sockets and are installed in residential areas where vehicles park on the street or in designated public parking bays (Figure 2). They are designed for routine charging near where residents normally park. ELC are currently the only provider of On-street chargepoints in East Lothian (39 in total).

Figure 2: On-street chargepoint – Eskside East[2]

[2] PlugShare (2022), Eskside East, https://www.plugshare.com/location/186416 , accessed 07th Dec 2022

2.1.2. Destination

These chargepoints are a mixture of “standard” 7 kW or “fast” 22 kW chargepoints and are installed primarily in locations with amenities nearby or where users will already be visiting, regardless of the presence of EVI (Figure 3). They are designed for users who wish to obtain a charge while they are parked for a medium period of time, for example when doing a weekly shop, visiting the cinema or at work nearby. In some cases, vehicles will be parked overnight at a Destination chargepoint. ELC currently provide 78 (73%) of the 106 publicly accessible Destination chargepoints in East Lothian according to a review of ZapMap data.

Figure 3: Destination chargepoint - High Street, Ormiston[3]

[3] PlugShare (2022), High Street, Ormiston, https://www.plugshare.com/location/231870, accessed 07th Dec 2022.

2.1.3. Journey

These chargepoints are up to 50 kW and are installed primarily in prominent town centre locations (Figure 4). They are used for top-up charging in town, or by people making longer Journeys who need to charge en-route. ELC currently provider 21 (95%) of the 22 publicly accessible Journey chargepoints in East Lothian according to a review of ZapMap data.

Figure 4, Journey chargepoints - Lindores Drive, Tranent[4]

[4] PlugShare (2022), Lindores Drive, Tranent, https://www.plugshare.com/location/215850, accessed 07th Dec 2022.

2.1.4. High-Powered Journey

These chargepoints are rated at greater than 50kW and located at ELCs Wallyford Park & Ride Journey Hub (Figure 5). They are offered for those needing a quick top-up charge, particularly before making an unplanned journey, and those passing through on the Trunk Road. ELC currently provide 2 (40%) of the 5 publicly accessible High-Powered Journey chargepoints in East Lothian according to a review of ZapMap data.

Figure 5: High-powered Journey chargepoint - Park and Choose, Wallyford[5]

! **Note:** Unless otherwise stated, this report combines both Journey and High-powered Journey EVI together for ease of understanding.

East Lothian residents have access to a diverse portfolio of chargepoints to serve different user needs; On-street, Destination and Journey. Currently 140 (81%) of 172 belong to ELC.

[5] Google (2022), Park and choose, Wallyford, https://www.google.com/maps, Accessed (22,11,22)

2.2. EVI footprint

Across all chargepoint types, ELC has a total of 231 sockets available, with a further 98 due to be installed to bring the total installed capacity up to 3.25 MW with 0.69 MW planned (Table 1).

Table 1: Current and planned EVI in ELC.

	Installation status	Number of chargepoints	Number of sockets or connectors	Total installed/planned capacity (kW)
On-street	Installed	39	39	273
	Planned	50	50	350
Destination	Installed	78	154	1,342
	Planned	24	48	336
Journey	Installed	21	34	1,336
	Planned	0	0	0
High-powered Journey	Installed	2	4	300
	Planned	0	0	0
Total	total	214	329	3,937

This portfolio serves a total of just over 1,100 EVs registered in East Lothian (Q2 2022).[6]

The EU's Alternative Fuels Infrastructure Directive targets 1 kW installed capacity per EV; ELC currently exceeds this significantly with 2.96 kW:EV, having secured 100% grant-funding to build ahead of demand. This creates an opportunity to monitor use, and gain understanding of the market as it grows.

[6]GOV.uk (2022), VEH0142, https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables, accessed 07th Dec 2022.

2.3. Utilisation

Analysis was conducted on ELC chargepoint data, covering 58,700 charging sessions split over three years from 2020 to 2022 to understand the current utilisation and to support the business case analysis. This gives a basis on which future cashflow and business modelling can be conducted.

The tables below show the primary outcomes of the analysis for time-based utilisation (% of time spent charging), energy-based utilisation (% of total possible energy delivered by the chargepoint) and median length of charging.

Table 2: % time-based utilisation of ELC estate

	Year		
CP power type	2020	2021	2022
On-street	(None installed)	9.08%	8.83%
Destination	9.15%	11.4%	20.5%
Journey	2.61%	4.23%	6.85%

Table 3: % energy-based utilisation of ELC estate

	Year		
CP power type	2020	2021	2022
On-street	(None installed)	1.20%	2.15%
Destination	1.91%	2.86%	6.04%
Journey	1.33%	3.39%	4.89%

Table 4: Median length of charging session

	Year		
CP power type	2020	2021	2022
On-street	(None installed)	8.33 hours	3.43 hours
Destination	2.87 hours	3.17 hours	3.37 hours
Journey	32 minutes	35 minutes	36 minutes

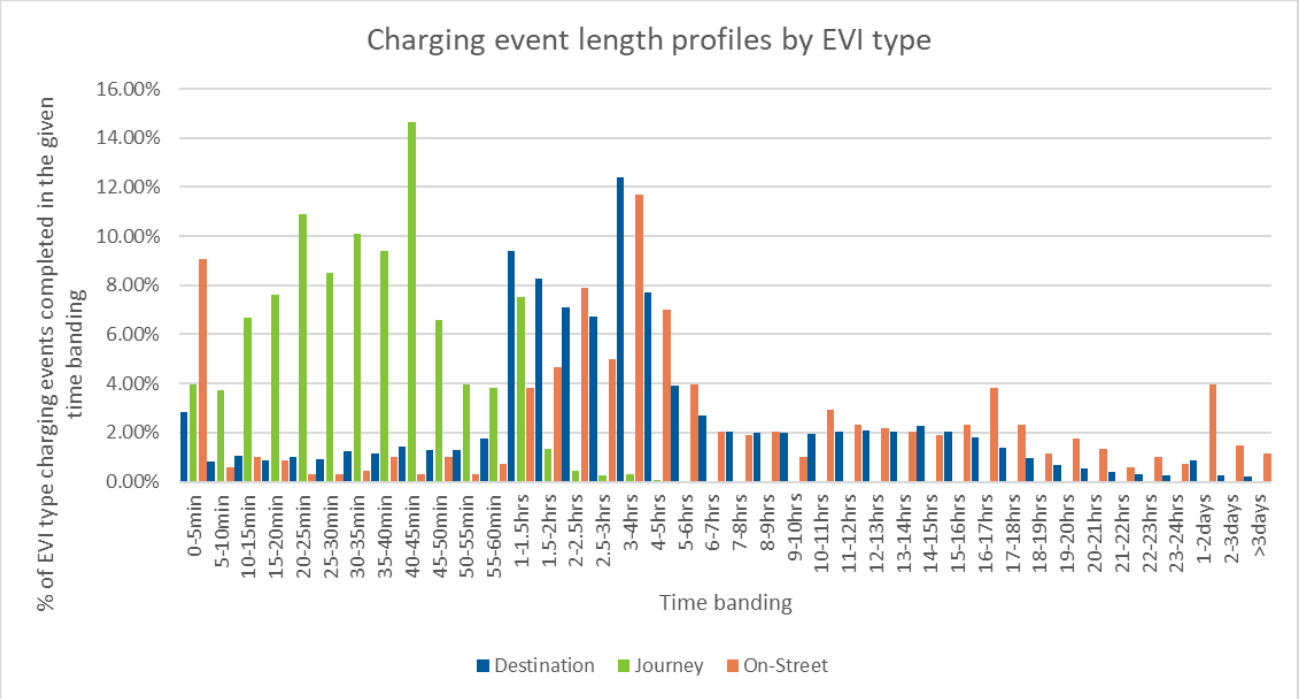


Figure 6: Charging event length profiles by EVI type

Further analysis was completed on the energy consumption, effective charging power and charging sessions (Tables, below). The analysis is per calendar year, although the data from 2020 is from July to December and the data from 2022 is from January to August. The earliest charging event was on the 27th of July 2020 and the last charging event was on the 19th of August 2022.

Table 5: Mean energy consumption per charging session (kWh)

	Calendar Year		
CP power type	2020	2021	2022
On-street	N/A	11.8	12.2
Destination	14.9	16.4	20.0
Journey	14.5	26.6	25.3

Table 6: Mean effective charging power per charging session (kW)

	Calendar Year		
CP power type	2020	2021	2022
On-street	N/A	2.13	3.38
Destination	4.98	4.72	5.52
Journey	27.3	47.9	38.7

Table 7: Number of charging sessions

	Calendar Year		
CP power type	2020	2021	2022
On-street	N/A	299	424
Destination	3,410	11,900	13,500
Journey	2,960	12,500	13,200

The analysis indicates that utilisation of the EVI is increasing across all EVI groups. The percentage of time vehicles are plugged into On-street EVI has dropped slightly but the utilisation in terms of kWh delivered has increased. This indicates that the charging behaviour is evolving, with the amount of time vehicles are plugged in and not charging reducing. The Destination EVI is the most highly utilised of the EVI groups.

It appears from the maximum power output analysis that the Journey EVI is not being used to its full potential, although this may be reflective of the types of vehicles using the infrastructure. This is shown by the average rate of charge; in 2022 an average of just 38.7 kW is delivered by 50 kW and 150 kW chargepoints. By maximising power output and reducing the length of time vehicle are plugged into the EVI, the revenue may be increased. This is because doing so has potential for more vehicles to charge on these chargepoints. As more vehicles are able to receive charging rates significantly over 50kW, it is likely that users looking for a quick top-up charge will move away from using Journey chargepoints that are lower-powered (i.e. less than 50 kW) and instead use High Power Journey chargepoints more often. As this transition happens, the use of slower Journey chargepoints will become more situational.

The ELC EVI estate is in a healthy position, with increasing utilisation and revenues across On-street, Destination and Journey chargepoints. This puts ELC in a strong position when negotiating potential alternative delivery models which may include the existing, revenue-generating estate. However, it is expected that increasingly residents and other user groups that are looking for a quick top-up charge will be drawn towards High Powered Journey chargepoints away frow 50kW Journey chargepoints.

2.4. Commercial arrangement and operating model

ELC currently owns and operates all its own EVI, which currently accounts to over 80% of publicly accessible chargepoints in East Lothian. Funding for this infrastructure has been mainly via grant-funding from Transport Scotland or central UK Government, and it has been registered with a variety of networks. The Journey chargepoints and most Destination EVI are registered with the ChargePlace Scotland network. On-street EVI is registered with either the Connected Kerb or Fuuse networks. Private owners of publicly accessible Destination chargers have registered their chargepoints on a variety of networks. All privately owned publicly accessible Journey and High-Powered Journey chargers are currently operated by Osprey and registered on their own network. Maps of the EVI in East Lothian from PlugShare (showing all EVI in East Lothian including non-ELC EVI), Zap-Map (showing Connected Kerb chargepoints) and ChargePlace Scotland showing (Journey EVI) are shown below.

Figure 7: Connected Kerb EVI in East Lothian - PlugShare[7]

[7] PlugShare (2022), East Lothian Council Area, https://www.plugshare.com/, Accessed (07/12/22)

Figure 8: Connected Kerb EVI in East Lothian - Zap map[8]

Figure 9: Journey charging EVI in East Lothian - ChargePlace Scotland[9]

2.5. Conclusions

As a result of an effective and successful programme, ELC has a comparatively large EVI portfolio for a Local Authority, which exceeds typical targets for installed capacity per EV.
The estate covers On-street, Destination and Journey charging use-cases.
The Estate is generating a substantial amount of revenue from increasing utilisation.
ELC is in a strong position to consider alternative delivery because it has good data on the current demand for charging and the revenue potential of the estate.

[8] Zap Map (2022), East Lothian Council Area, https://www.zap-map.com/live/, Accessed (22/11/22)
[9] ChargePlace Scotland (2022), East Lothian Council Area, https://chargeplacescotland.org/, Accessed (22/11/22)

3. Commercial Arrangement Options

Having considered the current status of the ELC EVI estate, this section examines typical commercial arrangements and the funding options available. This allows the range of possible options to be articulated.

3.1. Commercial arrangements

Four headline commercial arrangements are currently observed or being considered in the UK market. Figure 10 presents the commercial arrangements with their distinguishing features:

Commercial Arrangements	Own and Operate	Public-Private Commercial Partnership		Joint Venture	Land Lease
Common Subsets		External Operator	Concession		
Distinguishing Features	Most involved option for the LA from all aspects. It may choose to sub-contract certain activities.	LA covers all aspects except for payment	Commercial Arrangements that are governed by CCR16, as well as lower values ones not technically under CCR16	A New Entity is formed.	Third party is a tenant

Figure 10: Commercial arrangements used for EVI in the UK

Of these, the Own and Operate, Public-Private Commercial Partnership (PPCP) Concession, PPCP External Operator and Land Lease arrangements were examined in more detail. At the present time, creating a Joint Venture for EVI is not in-scope for ELC.

3.1.1. Own and Operate

The *Own and Operate* approach is the most involved approach for the Local Authority (LA) and is how the ELC network has been funded and operated to-date. The LA procures all the capital works, retains the ownership of the hardware and groundworks, and takes responsibility for operation and maintenance of the network. Consequently, it retains all the risk, control of the charging network including end-user price setting and all the revenue. The chargepoint operations and service is procured by the LA from third parties, but the LA is still responsible for the network.

The *Own and Operate* model is a high risk – high capital and high revenue - option for EVI but provides maximum control for the LA over the EVI network.

3.1.2. Public-Private Commercial Partnership

A Public-Private Commercial Partnership (PPCP) is a suite of commercial arrangements that have a sliding scale of investment, control, responsibility and revenue. There are two main subsets, which are distinguished by the level of investment and control which the LA retains; higher in the case of External Operator, lower in the case of Concession.

PPCP External Operator

The 'External Operator' PPCP approach offers the LA more control and revenue over the 'Concession' approach. This is because the LA funds all the capital investment. This will cover aspects such as groundworks, grid connection and the chargepoint itself.

Operating costs are then shared with a Chargepoint Operator (CPO). These can include back-office costs, electricity purchase, insurance and maintenance. Essential elements of control like technical specifications and locations of EVI are retained by the LA, although usually end-user tariffs will be controlled by the CPO. Partnership working in this way means that the LA can retain greater control of specific aspects of the EVI and operations can be covered by the CPO.

The risks associated with the external operator model are shared between the LA and CPO. The risk of regulatory change is shared between the CPO and LA whereas technology obsolescence is a risk that falls on the LA. Utilisation is a risk that the CPO holds and electricity price fluctuations can be either be on the LA or the CPO.

The key feature of the External Operator approach is that the LA provides more of the capital than in a Concession, retaining ownership of the electrical connection and hardware. This allows a greater level of control, with a supplier managing the operation of the chargepoints and sharing back a greater proportion of revenue.
Furthermore, it is well-suited to existing assets, when the CPO takes-on the infrastructure.

PPCP Concession

In the 'Concession' subset, the LA provides some or all the capital investment to establish an electrical connection point for a chargepoint supplier to install and operate chargepoints. The LA retains ownership of the groundworks and retains control over the quality of service by having an active role in contract management and performance monitoring of the chargepoint supplier/operator.

The risk and responsibility associated with installation, maintenance, operation, and management of utilisation is transferred to the private partner, who finances the capital and replacement costs of the charging infrastructure. The contract term can be long but should reflect the period required by the private partner to recoup the capital investment and make a return on it. The LA retains a portion of the revenue generated as payment for the concession and to fund contract management. Important elements of control over tariffs and service quality can be retained by ensuring that relevant terms and conditions are used.

This approach is seen as a middle-ground between public intervention and private investment where LAs can retain enough control over the charging network with the right terms and conditions. As a result, it can unlock private investment by more evenly sharing risk and revenue.

The key feature of the Concession approach is that the LA provides some or all capital for the electrical connection and retains ownership of it. This retention of ownership is essential for continuity of the charging network and to mitigate the risk of exclusivity in favour of a single supplier. Transport Scotland's EVIF programme funding could be accessed by ELC and its supplier/operator partner.

Summary

In reality, a PPCP is a sliding scale which will differ for each LA's situation, strategy requirements and possible arrangements that the LA can make with the chargepoint supplier. The contract lengths will therefore also vary depending on the agreements. It is also possible to combine both a Concession and External Operator within a single PPCP.

The key feature of this approach is that it guarantees the LA control of specific aspects the EVI and shares aspects of risk with the supplier.

3.1.3. Land Lease

The 'Land Lease' approach is the least-involved option for the LA. The LA offers land holdings which may be suitable for EV charging and leases them to a chargepoint supplier. The capital and operational costs are covered by the chargepoint supplier who also retains the risk and responsibility associated with installation, maintenance, and asset utilisation.

Since a 'Lease' is simply an interest in the property, the party leasing the land has a grant of possession of the land for a definite period and for a definite payment arrangement. Therefore, the LA has very limited control over the charging network (sometime this might include the electrical connection point) or the end-user service quality.

This is a low risk – low revenue option for EVI where the LA retains little or no control over the charging network. This may still be suitable for certain applications where the Councils own this land, like additional High-Power Journey chargepoints (and associated coffee and toilet conveniences) near Trunk Roads, like Wallyford Journey Hub, similar to private arrangements which appear to be emerging at Old Craighall, Gladsmuir or

Dunbar Services. Furthermore, a land lease approach allows other amenities to be developed on these sites such as coffee facilities, toilets, or small-scale retail.

3.2. Funding sources

EVI funding sources are not necessarily linked to the commercial arrangement, although under certain arrangements they can be. This section outlines the funding sources that have been considered during this analysis.

3.2.1. Local Authority funding

The earliest deployments of EVI were funded directly from LAs' own capital budgets. This approach is increasingly uncommon and is often the worst case for LAs as EVI can be expensive. ELC itself has a range of budgetary pressures and so it cannot be assumed that there will be significant capital budget available to fund infrastructure directly. This approach to funding is generally reserved for exceptional circumstances where funding is required at short notice or to make up a shortfall in funding from other sources.

3.2.2. Central government grant-funding

The most common LA funding source for EVI to-date has been grant-funding from central governments such as OZEV's On-street Residential Chargepoint Scheme (ORCS – expected to cease by March 2024) and Transport Scotland's Local Authority Infrastructure Programme (LAIP – now ceased) and ORCS Top-Up funding (also now ceased). This funding has been available to stimulate and support early adoption of EVs, support EVI in areas of market failure and provide equitable access to charging – when it has been unattractive for commercial operators to invest.

ELC has made excellent use of grant-funding to-date to fund and deliver the current ELC network. As the market develops, it is anticipated that grant-funding will tail off so it will be increasingly important that alternative funding sources are available to continue the roll-out of EVI in the region.

Transport Scotland's Electric Vehicle Infrastructure Fund[10] (EVIF) offers LAs a share of £30M over the next four year as up to 50% funding for projects that draw in private sector funding.

3.2.3. Private funding

Loans

Loans are a popular tool to attract financing for net zero projects. The key factors to consider are the loan term (or tenor) and interest rates (which can be fixed or floating).

The Public Works Loan Board (PWLB), Crown Commercial Services (CCS) and UK Infrastructure Bank (UKIB) are amongst a growing range of sources for funding, as well as traditional loans from commercial and retail banks.

A benefit of this funding source is that once the funding is secured it is the LAs to do with as they see fit, including financing any of the commercial arrangements described in Section 3.1 (page 16).

This financing source relies on the revenue from the infrastructure to pay back the loan and any interest. Therefore, a clear view of current and future utilisation will be needed to secure the loan. Some innovations in this space are exploring whether repayment terms can be linked to utilisation.

Bonds

A bond is a fixed-income instrument used to finance larger investments. These are different to loans as they are tradeable and fixed-rate, whereas loans are not tradeable and may have either fixed or floating rates.

Bonds that are used to raise funds specifically for climate-related projects are often called Green Bonds. These are linked to assets and backed by the issuer's balance sheet. Although not regulated,

[10] Scottish Futures Trust (2022), https://www.scottishfuturestrust.org.uk/page/electric-vehicle-charging-network, accessed (07/12/2022)

LAs are wise to use internationally-recognised Green Bond Principles or Climate Bonds Initiative standards to define the approach to issuance and set rules on the use of proceeds.

These bonds could potentially be used to top up grant funding and would be most suited to an Own and Operate or PPCP External Operator commercial arrangement.

3.2.4. Supplier-, operator- or partner-funded

Some chargepoint operators, suppliers of EVI and partner organisations also offer funding for of EVI. These sources usually cover a portion of the total costs and retain an appropriate portion of revenue in order to recoup their investment and make a profit. In some cases, these sources will fully fund EVI. However, this usually comes with strict contractual conditions, longer contracts and/or requests for exclusivity.

A range of funding and financing options are available to ELC, especially since it has a large, successful existing EVI estate. LA borrowing could supplement commercial arrangement with CPOs

3.3. Options shortlist

3.3.1. Methodology

Almost any commercial arrangement can be paired with any funding source and therefore there are many different permutations which could be considered.

To create a workable shortlist, the combinations were scored against four aspects:

- Risk – this refers to something that might occur, and if it does, will impact on the project's objectives of cost, time, performance, and quality. Some example risks associated with EVI are regulatory change, technology obsolescence and utilisation
- Revenue – This aspect covers the percentage share of income that is retained by ELC due to the contractual arrangements.
- Control – This aspect considers the features of the EVI network that ELC will be able to decide upon or have an input in. These features include the technical specifications of the EVI, the locations of the individual chargepoints and tariffs.
- Responsibility – This aspect accounts for the staffing resource that ELC will need to commit to the given commercial agreement. This covers responsibility for planning, operations, customer service, purchase of electricity and decommissioning.

The detailed scoring can be found in Appendix A (page 45).

In summary, there is a preference for funding future EVI deployments from external sources (whether Central Government or private organisation). Furthermore, arrangements which afford ELC more control over On-street and Destination locations are stronger.

3.3.2. Options

This analysis allowed a shortlist of five options to be defined for further analysis. These are described in turn, below.

Do Nothing

Current EVI	Future EVI	Notes
ELC to continue to **own and operate** the current EVI until it fails, warranties lapse and maintenance contracts end, at which point EVI will be decommissioned and removed	No new EVI deployed by ELC.	The private market will be left to decide whether or not to meet the demand for EVI without public support or intervention. Selection of future charging sites (if any) will not be under ELC control, other than via the usual Planning process

Own and Operate

Current EVI	Future EVI	Notes
ELC to continue to **own and operate,** and replace the current EVI.	ELC to continue EVI deployments under an **own and operate** arrangement; retain all revenue and be responsible for all operations. Roll-out new EVI across all types, using Central Government funding, private financing or borrowing or internal capital budgets.	Supplier-funded offers will be rejected.

Part-sell Estate

Current EVI	Future EVI	Notes
Sell Journey chargepoints and charge a small fee for access to the electrical connection, giving a CPO a ready-made estate with proven revenue under a **Land Lease**. ELC to continue to **own and operate**, and replace current On-street and Destination EVI	ELC will not deploy any more Journey chargepoints. ELC will continue to deploy new On-street and Destination chargepoints in an **own and operate** approach, using Central Government funding, private financing or borrowing or internal capital budgets.	ELC's Journey chargepoint sites are not attractive to commercial operators as they are not physically expandable to attractive sizes, nor feature coffee or toilet facilities. The private market will be left to decide whether or not to expand the Journey chargepoint network without public support or intervention

Leverage Estate

Current EVI	Future EVI	Notes
Use existing EVI as a lever to secure preferential terms from the private market on a **Concession** to operate the existing network, as well as develop and expand it. ELC will continue to access Central Government funding to support the development of the EVI network, especially for On-Street and Destination chargepoints under a **concession** arrangement.		Offering-up the existing network will allow for stronger negotiations around aspects such as contract length, tariffs, locations, revenue and risk-sharing.

Fully-sell Estate

Current EVI	Future EVI	Notes
Sell all chargepoint assets to a private operator and charge a small fee for access to the electrical connection, giving a CPO a ready-made estate with proven revenue.	No new EVI deployed by ELC.	ELC's Journey chargepoint sites are not attractive to commercial operators as they are not physically expandable to attractive sizes, nor feature coffee or toilet facilities. The private market will be left to decide whether or not to meet the demand for EVI without public support or intervention. Selection of future On-Street and Destination charging sites (if any) will not be under ELC control, other than via the usual Planning process

A shortlist of five options are available under which current EVI is managed and planned EVI is deployed, leveraging external funding where possible.

4. Options Appraisal

Having defined the five options, a range of criteria were defined to appraise the relative strengths and weaknesses of each.

! **Note:** The full appraisal detail is referenced in Appendix B (page 46).

4.1. Appraisal Criteria

A range of criteria have been used to appraise the options by considering investment, control, responsibility, risk and revenue strengths and weaknesses:

Table 8: Options appraisal categories.

Investment	Control	Responsibility	Risk	Revenue
CAPEX	Technical specification	Planning approvals	Technology obsolescence	EV charging income
OPEX	Location choices	Grid connection	Regulatory change	Ground rent
	End user tariff	Grid connection to feeder pillar	Electricity prices	
		Feeder pillar	Utilisation	
		Groundworks to chargepoints	Unique risk 1	
		Chargepoint Installation	Unique risk 2	
		Operations		
		Insurance		
		Customer service		
		Electricity purchase		
		Decommissioning		

The following sections highlight the main findings from the options appraisal and show the scoring that has been assigned to each option.

! **Note:** The scores are ranked from low to high in terms of the implications of the option on the Local Authority.

For example, a score of high for control means that ELC will have a high degree of control over aspects such as technical specifications, locations of EVI and end user tariffs – this ‘high’ is marked green because it is considered a strength. Conversely, a score of high for investment indicates that ELC will be required to invest heavily in the option to deliver the EVI network – this ‘high’ is marked red because it is considered a weakness.

4.1.1. Do Nothing

Pros

Only a low level of investment is required for continued operations, electricity purchase and contract management whilst the current EVI is operational. By doing nothing there will be no requirement for long-term investment and therefore long-term risks associated with ownership and operation of EVI are avoided. ELC is also able to retain high control over the existing infrastructure and can continue

to set tariff levels. ELC also continues to generate revenue from existing infrastructure until its decommissioning.

Cons

By doing nothing, the EVI network is likely to transition into private sector ownership and operation at alternative sites. However, this leaves ELC with no control over location of EVI or tariffs. Therefore, the main risk here is that the private sector may deliver an inequitable EVI network and this strategy leaves no options for ELC to influence this.

There is also a possibility of a poor public image if the private sector does not deliver an effective EVI network or old and increasingly faulty EVI may provide a bad customer experience in the transition period to a private network. Drivers that have become accustomed to using ELC sites will also have to go elsewhere once those sites are decommissioned – potentially travelling further to charge, at greater cost.

Furthermore, there is also no long-term revenue generation from EVI and short-term revenue may be susceptible to fluctuation with the current cost of living and energy crisis affecting public charging habits. This may impact the cash flow of ELC. Also, as the EVI will not be maintained beyond their existing contract periods (many ending in 2023 and 2024), there is potential for assets to be decommissioned prior to their expected lifetime (10 years) which will reduce potential revenue generation - representing poor value for money from the initial grant funds.

Score

Table 9: Appraisal - Do Nothing

		Investment	Control	Responsibility	Risk	Revenue
Do Nothing	Existing EVI	Medium	High	High	Medium	Medium-High
	Future EVI	Low	Low	Low	Low-Medium	Low

4.1.2. Own and Operate

Pros

ELC retains high control over the existing infrastructure and can continue to set tariff levels and decide on locations for future EVI. This gives ELC the best possible chance to achieve charging equity and to continue to lead the way. There is also potential for increased long-term revenue generation. As existing EVI will continue to be maintained, the lifetime of the assets will be maximised which in turn will maximise revenue potential from these assets when compared to the *Do Nothing* approach.

Cons

In the long term, a high level of investment will be required to fund further purchase, installation, and operation of EVI. As central government grants reduce, the cost of new EVI would have to be at least part funded by ELC. It is highly likely that very soon no central funding for *Own and Operate* models will be available at all. This option therefore effectively requires ELC to 100% fund future EVI, and 100% maintain its existing estate.

This will require an increasing level of resource from ELC to expand and operate the growing network as well as manage contracts. There is also the risk of the technology becoming obsolete or utilisation dropping. Revenue is also susceptible to fluctuation, which may impact the cash flow of ELC.

Score

Table 10: Appraisal - Own and Operate

		Investment	Control	Responsibility	Risk	Revenue
Own and Operate	Existing EVI	Medium	High	High	Medium	High
	Future EVI	High	High	High	High	High

4.1.3. Part-sell Estate

Pros

Depending on the value of the portfolio of Journey chargepoints, ELC will capitalise on its historic investments from the sale of its Journey chargepoints. ELC would continue to retain full control over the On-street and Destination chargepoints, which will allow them to decide locations for EVI supporting equitable distribution of charging. ELC will also retain control of tariffs for these remaining sections of its EVI which will support access to affordable charging where residents cannot charge at home.

Risk is shared more with the private sector than in other options. Since Journey EVI can be considerably more expensive than On-street or Destination EVI, ELC has lower financial risk than if they owned and operated everything.

ELC retains all revenue from On-street and Destination chargepoints. However, as the goal is equitable charging, it is likely that there will be no profit from EVI on top of covering the operational costs.

Cons

There will be some capital investment required for the installation of future On-street and Destination chargepoints, which may need to come from Government, private or ELC sources. This option cannot mitigate against the political risk where central government grants are less supportive of *Own and Operate* models.

The remaining ELC owned EVI will still leave a sizeable burden on ELC resources. Surplus revenue generated by more commercially viable Journey chargers will also no longer offset any losses on less commercially viable Destination chargers

There is risk in owning and operating infrastructure such as the technology becoming obsolete or utilisation dropping. However, this risk is lower than owning all EVI as this risk is shared with the private sector.

Revenue is also susceptible to fluctuation, which may impact the cash flow of ELC.

Score

Table 11: Appraisal - Part-sell Estate

		Investment	Control	Responsibility	Risk	Revenue
Part-sell Estate	Existing EVI	Low-Medium	Medium	Medium	Medium	Low-Medium
	Future EVI	Medium	Medium	Medium	Medium	Low-Medium

4.1.4. Leverage Estate

Pros

Leveraging the estate and partnering with a private sector organisation has the potential to get a greater capacity of EVI for every pound of public money spent. With the current EVI network as a bargaining chip, through contract negotiations ELC can retain some control over factors such as locations for EVI and tariffs, thereby supporting charging equity. ELC can also continue to access grant-funding or use ELC's own funding to further improve the business case to the private sector.

There is less responsibility on ELC than in a pure *Own and Operate* arrangement as the third party will absorb some of these responsibilities. Risk is also shared with the private sector and by varying the share of other contractual aspects, an appropriate level of risk can be agreed upon. In this case, as charging equity is the goal, a lower level of revenue may be preferred and a higher level of control over the location of EVI might be preferable.

Cons

Leveraging the estate and contracting with a private sector organisation will likely require a higher level of risk to secure favourable contractual arrangements. Also, although it may be possible to retain control over some factors, a degree of control will have to be given to the private sector.

As ELC is not owning and operating future EVI, there is less responsibility than in that scenario. However, ELC will be heavily involved in the control of the network, so there will still be a reasonable resource burden on ELC, especially around contract management.

Score

Table 12: Appraisal - Leverage Estate

		Investment	Control	Responsibility	Risk	Revenue
Leverage estate	Existing EVI	Low	Medium	Medium	Low-Medium	Low-Medium
	Future EVI	Medium	Medium	Medium	Low-Medium	Low-Medium

4.1.5. Fully-sell Estate

Pros

Depending on the value of the portfolio ELC, will capitalise on its historic investments through the sale of the existing EVI. This means that ELC will have no responsibility for the ownership and operation of EVI, meaning less staff overhead will be required from ELC. There is also lower financial risk to ELC in using this approach. There are also no ongoing risks associated with EVI ownership or operation such as utilisation or technology obsolescence.

Cons

As ELC will have no control over the EVI, ELC will have very limited control over location of EVI, tariffs or an ability to influence charging equity.

The main risk is that the private sector may deliver an inequitable or ineffective EVI network and ELC will not be able to influence this without backtracking on this option and installing their own EVI. There is also the possibility of a poor public image if the private sector does not deliver an effective or equitable EVI network. There is also no long-term revenue generation from EVI.

Score

Table 13: Appraisal - Fully-sell Estate

		Investment	Control	Responsibility	Risk	Revenue
Fully-sell Estate	Existing EVI	Low	Low	Low	Low	Low
	Future EVI	Low	Low	Low	Low	Low

4.2. Recommendation

4.2.1. Options Comparison

Table 14 shows a combined view of the options appraisal:

Table 14: Appraisal - all options

Category		Investment	Control	Responsibility	Risk	Revenue
Do Nothing	Existing EVI	Medium	High	High	Medium	Medium-High
	Future EVI	Low	Low	Low	Low-Medium	Low
Own and Operate	Existing EVI	Medium	High	High	Medium	High
	Future EVI	High	High	High	High	High
Part-sell Estate	Existing EVI	Low-Medium	Medium	Medium	Medium	Low-Medium
	Future EVI	Medium	Medium	Medium	Medium	Low-Medium
Leverage Estate	Existing EVI	Low	Medium	Medium	Low-Medium	Low-Medium
	Future EVI	Medium	Medium	Medium	Low-Medium	Low-Medium
Fully-sell Estate	Existing EVI	Low	Low	Low	Low	Low
	Future EVI	Low	Low	Low	Low	Low

4.2.2. Recommendation

By viewing the options appraisal holistically and through the lens of ELC's priorities as defined below, the strongest options can be identified.

Priority: Accessible and Equitable EV Charging

To achieve equitable and accessible charging, there is a requirement for Control, at least in the On-street and Destination areas. Therefore, any option with low control can be excluded.

> *Do Nothing* and *Fully-sell Estate* do not fulfil the criteria of accessible and equitable EV charging.

Priority: Reduce Public Investment

To reduce dependence on capital public funding sources (whether ELC capital budgets, ELC borrowing or Central Government grants), options which indicate high levels of investment from ELC can be ruled out.

> Despite being strong on control, *Own and Operate* does not fulfil the criteria of reducing public investment.

Priority: Secure Long-Term Revenue Sources

Following the first two filters, *Part-sell Estate* and *Leverage Estate* are left as the remaining options.

By balancing control and investment, the revenue that ELC will retain from either option is likely to be quite similar.

> When likely revenue for ELC is examined, the two remaining options are broadly equal.

Priority: Define Clear ELC Responsibilities

Although there is likely to be a similar degree of responsibility on ELC under both options, the specific responsibilities are different for each.

With the *Part-sell Estate* option, ELC will continue to own and operate all on-street and destination EVI. Therefore, ELC is responsible for all aspects of these networks including all installations, operations, and customer service.

In contrast, under the *Leverage Estate* option, installation of the chargepoint, all operations and customer services will fall on the private sector partner across all EVI types. However, ELC will be responsible for the groundworks and grid connections for all EVI types to allow new providers to be sought in the future.

> The main difference in responsibility between *Part-sell Estate* and *Leverage Estate* is the retention of responsibility for either ground works and electrical connections or EVI operations.

Priority: Manage ELC's Risks Effectively

There are differences in the apportionment of risk between the options. It is perceived that the *Leverage Estate* option will have lower risk than the *Part-sell Estate* option. This is because risks that are associated with the chargepoints themselves such as technology obsolescence, regulatory change and (in some part) utilisation falls on the CPO rather than ELC. The sharing of risk is one of the main benefits of a partnership approach such as *Leverage Estate*.

There are factors outside the scope of this analysis that have factored into this decision. Through discussion with the ELC project team, it is understood that there is a desire from the ELC procurement team to have one single approach across the EVI network. The *Part-sell Estate* option would result in two different approaches for different types of EVI whereas the *Leverage Estate* option would be one contract and approach across the whole estate.

One further factor that has supported the decision is that if in practice the *Leverage Estate* option proves to be ineffective, ELC could switch to pursuing a *Part-sell Estate* option or conversely return to an *Own and Operate* model. However, the converse is much less possible - once the Journey EVI has been sold off, it will be much more difficult and costly to in-source the estate to leverage it.

The *Leverage Estate* option is assessed to be lower risk to ELC than Part-Sell Estate, as well as harmonising the approach in the region and allowing for more radical future options.

The *Leverage Estate* option is recommended as the most suitable for ELC.

5. Implications of Recommended Option

The analysis in the sections above has concluded that the strongest option is to Leverage the Estate. The implications of this approach for commercial strategy and deployment are explored in detail in the sections below.

5.1. Procurement

5.1.1. Commercial arrangement

To share the risk, revenue, responsibility, and control with the private sector, public-private commercial partnerships will be required. The contract must distinguish between current EVI (which will be managed under *PPCP External Operator* arrangements) and future EVI (which will be delivered under PPCP Concession arrangements).

> It is recommended that ELC let PPCP contracts, each with an *External Operator* element for existing EVI and Concession element for future EVI.

Some of these aspects are expanded below but a detailed business case and risk assessment is recommended to ensure that the specific details are fully worked-through.

5.1.2. Competitive appointment

There are already three CPOs operating in East Lothian including ELCs own EVI (Osprey and Podpoint are the other two), but multiple alternatives are active in the UK market. The procurement process should seek to secure a high value for money and simultaneously demonstrate ELC's commitment to a more commercial approach (thus aligning with the anticipated approach to EVIF funding).

> It is recommended that a competitive tender should also be completed for third party CPOs rather than through direct or follow-on awards.

5.1.3. Addressing market failure

Any commercial agreements should aim to support areas of market failure such as North Berwick and Gullane where private investment is likely to be less forthcoming (due to their remoteness from the Trunk Road). The eventual contracts should give ELC a reasonable say over new locations to be developed.

> It is recommended that ELC should have the ability to either break the contracts in the event of poor equitability outcomes and/or have the unhindered ability to contract other suppliers to fill any gaps.

5.1.4. Encouraging competition

Tendering for multiple suppliers is one method of ensuring exclusivity or market failure are both avoided. However, it has been observed that some conditions of contracts can promote exclusivity and these should be avoided. One example of poor practice is where buffer zones around chargepoints installed by one supplier that make it impossible for other suppliers to install EVI in the area.

It is possible to engage multiple different suppliers to supply and operate EVI in one region. This can have some benefits, such as diversifying the operator portfolio and allowing specialist operators a chance to be involved in the network. However, more suppliers will require additional ELC resource to oversee contract management. Also, as the scale of the project will be smaller for each involved than if there was one supplier for the whole area, there may be less appetite from suppliers. This may also lead to the commercial agreements that are offered on less attractive terms to ELC.

> To avoid exclusivity or contract management overheads, it is recommended that ELC tender for at least two suppliers who can handle a diverse portfolio of On-Street, Destination and Journey charging.

5.1.5. Allowing flexibility

There is a desire from ELC to reserve an area or portion of all areas to use as a testbed for innovation, and to retain knowledge and experience within the local authority to allow it to rapidly respond should the commercial sector fail to deliver.

> It is recommended that the conditions of any contract allow ELC to install EVI without any constraint.

5.2. Regulation

Any EVI installation must conform to product standards. The regulations set out within these standards cover aspects such as:

- Wiring *(BS 7671:2018+A1:2020)*
- Electromagnetic compatibility *(Electromagnetic Compatibility Regulations 2016)*
- Electrical equipment safety *(Electrical Equipment Safety Regulations 2016)*
- Smart charging *(Electric Vehicles (Smart Charge Points) Regulations 2021)*
- System functionality *(PAS 1878:2021)*
- Demand side response (*PAS 1879:2021)*
- Accessibility of EV charging *(PAS 1899:2022)*
- Plugs, socket outlets and connectors *(BS 1363-1/2:2016+A1:2018, BS EN 60309-1/2/4:2021, BS EN 62196-1/2/3:2014)*
- Conductive charging systems *(BS EN 61851-1:2019, BS EN 61851-21-1/2:2017, BS EN 61851-22:2002, BS EN 61851-23/24:2014, BS EN 61851-25:2021)*
- EV communication for power utility automation and vehicle to grid communication *(PD IEC/TR 61850-1:2003, PD IEC TS 61850-1-2:2020, BS EN 61850-3:2014, BS EN 61850-4:2011+A1:2020, BS EN 61850-5:2013, BS EN 61850-6:2010+A1:2018, BS EN 61850-10:2013, BS EN ISO 15118-1:2019, BS EN ISO 15118-3:2016, BS EN ISO 15118-4:2019, BS EN ISO 15118-5:2019, BS EN ISO 15118-8:2020, BS EN ISO 15118-20:2022*
- EV wireless power transfer (WPT) systems *(BS EN 61980-1:2021, PD CLC IEC/TS 61980-2:2020, PD CLC IEC/TS 61980-3:2020)*
- PAS1899, 2022

> It is recommended that all hardware comply to these regulations on top of the established OZEV minimum technical standards.

It is the responsibility of ELC to ensure that they are satisfied that EVI products and installations are compliant with these regulations.

Further details of the regulations can be found in the BEAMA Guide to Electric Vehicle Infrastructure report[11].

5.3. Contracts

5.3.1. Contract length

One of the assessed strengths of the *Leverage Estate* option is that it gives greater weight for ELC to secure an appropriate contract length. The length of a PPCP contract typically hinges on the share of risk, revenue, responsibility and control with the private sector. Currently, many concession contracts being let in the UK market for EVI are upwards of 10 years in length, with some anecdotal reports that a minimum of 15 years is required by some On-street suppliers.

By leveraging the existing estate's utilisation, current revenue-generation and cheap electricity supply tariffs, a shorter contract should be achievable. It may be desirable to add a break period at five years and possible two-year extension to balance contractual up- and down-sides.

> It is recommended that contract durations of seven years are the target and that this is a key topic in pre-tender market engagement activities.

[11] https://www.beama.org.uk/resourceLibrary/guide-to-electric-vehicle-infrastructure.html

As ELC is in a good position with the current charging network, time can be taken to properly engage the market and assess whether this is realistic.

5.3.2. Break clauses

Break clauses are points in the contract where ELC can exit, subject to certain conditions like SLAs not being met. This builds-in penalties to help ensure the contract is delivering against ELC's priorities.

If a seven-year contract is adopted, this could be in the form of 5+2+2 years which gives ELC one option to exit from the contracts early and one to extend.

One other condition of the contracts could be to have a break clause if the supplier company is sold. Historically there has been issues transferring assets and conditions of contracts when CPOs are sold so having this condition in the contract will provide ELC leverage to ensure the changeover is smooth.

It should be noted that many commercial organisations view a seven-year 5+2+2 contract as a *de facto* five-year contract. Therefore, further consideration should be given as to the nature of the break and what remediation might be offered should the contact be broken at five years, to ensure the deal remains sufficiently attractive to third parties.

5.3.3. Revenue/profit share

With the move to more PPCP contracts, the question of LA income is more hotly discussed and debated in the industry. LAs can obtain revenue through a revenue-share or profit-share.

Revenue-share works by splitting the revenue generated from charging events after initial deductions are made for things like the cost of electricity (as determined by the contract). The remainder is then split between the LA and the partner.

Conversely, a profit-share uses open-book accounting principles to determine when the CPO is making a profit and share a proportion of this back to the LA.

This means that profit-shares may result in greater LA income in the long-term but are less valuable in the short-term and more difficult to audit. Revenue-shares may result in additional cost in the contract to the CPO but are more straight-forward to manage.

Either way, the income could be used to subsidise future installations and cover staff costs for contract and supplier management.

It is recommended that a revenue-share model is adopted and profit-share is avoided.

Responsibility

The contract should clearly articulate where responsibility falls for certain aspects such as planning, installation, operation, customer service and decommissioning. The table below gives an indication of the targeted share of responsibility might look for ELC.

Table 15: Responsibilities of EVI network

Responsibilities of EVI network	
Planning approvals	ELC
Grid connection	ELC
Groundworks from grid connection to feeder pillar	ELC
Feeder cabinet and meter	ELC
Groundworks to chargepoints	Supplier
Chargepoint Installation	Supplier

Operations	Supplier
Insurance	Supplier
Customer service	Supplier
Electricity purchase	ELC
Decommissioning	Supplier

Ensuring this is clear from the beginning should remove uncertainty down the line. It is also expected that ELC will leverage the council's own energy purchasing power to acquire attractive tariffs and will therefore be responsible for purchasing the electricity. This should then be reimbursed from the revenue before any revenue split occurs.

5.3.4. Control

Control is a primary driver of the recommended option and it is imperative that contracts explicitly state what aspects of the EVI ELC has control over, what is shared and what is the responsibility of the partner organisation.

The primary areas of control that should be outlined within any contract are what infuence ELC has over:

- Technical specifications of EVI;
- Specific locations;
- Electricity purchase; and
- Tariff principles

To achieve this, the contract should state the type of EVI (On-street, Destination or Journey) that the partner is expected to install as well as any specifications that these must meet (for instance accessibility of EVI: PAS1899, 2022).

It is expected that the choice of locations will be shared between ELC and the partner organisations. It is recommended that ELC pick focus areas for EVI installations, and the partner organisations then assesses the sites for suitability, an iterative process should follow where sites will be decided between the parties.

Practically speaking, this could be achieved by a Red-Amber-Green assessment of sites by the future supplier. Red sites would be those which are not seen to be commercially viable, amber sites are partially viable and green are commercially viable. ELC could require that a particularly ratio of Red-Amber-Green sites is delivered within the concession part of the contract.

ELC has access to centrally-procured electricity contracts that are at favourable levels compared to prices on the open market. Where possible, these should be offered in the contract to maintain control over the underlying wholesale price.

Furthermore, to support equitability in the network, ELC should explore the pricing principles which are applied to this. Whilst direct tariff control is not recommended due to complexity and stifling private flexibility, some limits to the end-user pricing should be articulated to avoid that the CPO exploits the preferential wholesale prices. This could achieved through a price ceiling.

It is recommended that ELC control technical specifications, locations, electricity supply and tariff pricing principles.

5.3.5. Asset ownership

It is recommended that ELC retain ownership of grid connections, grid connections to feeder cabinets, feeder cabinets and groundworks to chargepoints at the end of a contract or at contract termination.

An alternative is that during the contract the third party retains ownership of all aspects of EVI including any cabling and groundworks that they installed to ensure that they are responsible for the operation and maintenance of all aspects. Then at the end of the contract these revert to the

ownership of ELC so that continuity of service can be ensured, and a new partner organisation will be able to take over operation and install their own chargepoints if required.

5.4. Governance

5.4.1. SLAs

Value for money is an important aspect of any EVI network and it is important that mechanisms are put in place to measure this and ensure the project delivers on it. Service-level agreements (SLAs) and break clauses can be used to hold the partner organisation to account and ensure that if the project is not delivering for ELC's strategy, then the LA can act.

Below is a list of SLAs that could be included within a contract to ensure the project provides value for money:

- Number of chargepoints by EVI type installed by a target date
- Percentage of EVI installed in the so-called Red, Amber and Green areas (areas to be decided prior to tender)
- Percentage of equipment uptime (99% per individual chargepoint, going beyond the consumer experience at public chargepoints policy proposals[12])
- Percentage of network uptime (99% in line with the consumer experience at public chargepoints policy proposals[13])
- Percentage of charge events that result in a successful payment (99%)
- End-user tariffs remain at or below a fixed upper percentage tied to price of purchased electricity
- Proportion of customer service phone calls which are answered within 30s
- Proportion of customer service enquiries which are successfully answered

5.4.2. Quality Assurance

Key Performance Indicators (KPIs) are quantifiable measures of performance, defined over a time period for a specific aspect of the project. KPIs provide targets that ELC can aim for, milestones to gauge progress towards the vision and insights to steer the direction of the contract.

Measuring aspects this way will help quantify the quality of the project and show if changes need to be made to ensure that quality is assured. Table 16 presents a selection of KPIs that can be measured to support quality assurance.

Table 16: Possible KPIs for EVI network.

KPI:	Description:	Calculation:	Benchmark:	Data sources:
EV uptake	Monitors the pace of EV uptake, with reference to the 2030 ZEV mandate	The total number of EV registrations in ELC is divided by the total number of UK vehicle registrations	2030 ZEV mandate uptake projections	ELC EV registration stats, DfT Total vehicle registrations in ELC, DfT
Infrastructure Deployment Gap	Monitors the pace of infrastructure deployment, with reference to the EV uptake scenarios	The total number of charging sockets deployed in ELC is subtracted from the projected need, by chargepoint type	ELC EV Strategy	Number of public chargepoints by type (NCR or other source) Charging socket need by type (ELC analysis)

[12] https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-chargepoints
[13] https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-chargepoints

kW of installed capacity per EV	Monitors the correlation between EVs uptake and infrastructure deployment	Sum of installed capacity for charging sockets in ELC is divided by the total number of EVs registered within ELC	1 kW/EV	Number of public chargepoints by type (NCR or other source) ELC EV registration stats
Capital Investment	Monitors the capital invested in chargepoints to assist with future funding	The total capital cost of installed chargepoints is divided by the total number of chargepoints installed under the programme	7/22 kW dual socket = £11,400 50 kW chargepoint =£32,500 150 kW chargepoint = £50,000	ELC Chargepoint deployment capital costs
Business case	Monitors the operating costs and revenues to assist in revising the business case	The operating costs are subtracted from the revenues per chargepoint	All Journey EVI creating revenue. On-street and destination at least break-even	Operating costs per chargepoint Revenues per chargepoint
Time-utilisation	Monitors the use of the chargepoints installed	Proportion of time when the chargepoint is actively charging divided by total time period	Targets to be devised by ELC	CPO data
Energy-utilisation	Monitors the use of the chargepoints installed	kWh delivered divided by the total kWh that could be delivered.	Targets to be devised by ELC	CPMS
Chargepoint network reliability	Monitors the availability of EVI on the network	The total uptime divided by the total time in the monitoring period	See SLAs	Uptime per chargepoint
Chargepoint reliability	Monitors the chargepoints which are unreliable	Proportion of chargepoints which meet the uptime KPI over the time period	See SLAs	Uptime per chargepoint

5.5. Programme

5.5.1. Risk management

To understand the possible risks associated with developing EVI a risk register has been created. The table below outlines five risks with the highest residual risk score. The full risk register can be seen in Appendix C: Risk register. The Risk register should be amended for every EVI project to account for any unique risks.

Table 17: Top five risks in risk register

RISK TITLE	RISK CAUSE	RISK EFFECT	INHERENT RISK SCORE			Risk mitigations	RESIDUAL RISK SCORE		
			Impact	Probability	Total inherent risk score		Impact	Probability	Total residual risk score
Electricity prices increase further	Global fuel shortages and energy policy	Reduced commercial opportunities in procurement, reduced profits for CPO - delayed break-even point	5	8	40	Ensure energy price trends are monitored and use current LA energy contracts for a more stable supply cost.	4	8	32
Inability to secure sufficient private investment	Contract terms or sites are commercially unattractive	Reduction in project scope or requirement for additional council investment	10	4	40	Flexibility on terms and sites built into procurement. Early market engagement indicates offer is commercially attractive. Ensure commercially attractive sites are included with remote sites to support business case for investors. Ensure sufficient time is allowed for procurement to give CPOs enough time to put suitable offers together.	10	2	20

Lack of commercial interest in bidding for EVIs	Contract terms or sites are commercially unattractive	Reduction in project scope or requirement for additional council investment. Inability to deliver project. Poor offering from CPOs	7	5	35	Flexibility on terms and sites built into procurement. Early market engagement indicates offer is commercially attractive. Ensure commercially attractive sites are included with remote sites to support business case for investors. Ensure sufficient time is allowed for procurement to give CPOs enough time to put suitable offers together.	6	3	18
Commercial partner/ CPO pulls out of the project	Contract terms are unattractive or selected EVI sites are infeasible. Collapse of commercial partner/CPO business.	Additional procurement activity required - delay to programme delivery	8	3	24	Being flexible and having an ability to negotiate terms embedded in procurement process. Being flexible with site selection. Ensuring robust financial due diligence from the start.	7	2	14

Lack of key staff resource.	Project is dependent on a wide range of in-house expertise across multiple departments to cover diverse work packages.	Losing access to this resource during the project period could delay project delivery.	6	5	30	Ensure expertise is well embedded in teams contributing through the project and not only with a sole member of staff in a department. Ensure deputy system is in place for all key staff, with consistent task management and tracking. Ensure remote working arrangements are in place for all key staff in case of restricted mobility. Employees encouraged to self-test for Covid-19 and take up the offer of a vaccine. Continue to maintain Covid-19 controls.	3	4	12

5.5.2. Resourcing

A key aspect of a coordinated EVI deployment is ensuring that the correct staff are involved in projects and that they have defined responsibilities. Not all local authorities have dedicated staff involved with EVI and this can cause problems when determining who holds what responsibilities.

ELC do have a single member of staff dedicated to EVI and this has been beneficial to the region as evidenced by the scale and quality of the EVI network. As the scale of the network grows it may be necessary to grow the team involved in EVI, potentially using incoming revenue to support or subsidise the cost of employment.

Table 18 outlines the potential roles and responsibilities that may be required as the network grows under the recommended option. The table indicates the roles of officers, possible percentage of full-time employment of officers, the level of officers within the council and their anticipated responsibilities

Table 18: Roles and responsibilities of staff involved with EVI development.

Officer	Approx. FTE	Level (RASCI role)	Responsibilities
EV Infrastructure Lead	1	Management (Responsible)	Oversee development of procurement specification; Co-ordinate bids for external funding; Contract manage infrastructure supplier(s); Identify sites for EV infrastructure installation; Conduct ongoing analysis and reports of network growth and usage; First point of contact for ELC local authority officers; Co-ordinate delivery activities with ELC and other local and regional authorities as appropriate
Transport Planning	0.3	Leadership (Accountable)	Provide strategic direction and sponsorship; Gain and maintain interdepartmental buy-in; Brief and respond to direction of elected members, as appropriate; Report to senior management; Co-ordinate strategic decisions with ELC and other local and regional authorities, as appropriate
EV Infrastructure Coordinators	At least 1	Delivery (Support)	Individual(s) who cover specific detailed and operational aspects which the EV Infrastructure lead is not responsible for, including: • Procurement specification • Grant bid management • Network analysis, KPI/SLA tracking • Coordination with neighbouring authorities • Resident management
Procurement	0.1	Delivery (Support)	Set up EV infrastructure procurement processes and run initial EV infrastructure procurement round; Manage updates to procurement specification as and when new requirements emerge
Parking	0.1	Delivery	Implement TRO and facilitate installation for car parks and manage EV-only parking bay enforcement

Officer	Approx. FTE	Level (RASCI role)	Responsibilities
		(Support)	
PR and Communications	0.05	Delivery (Support & Informed)	Raise public awareness of expansion to EV infrastructure network; Design branding of network, if appropriate
Transport Planning	0.10	Management (Consulted)	Provide information and guidance to ensure that expansion of EV infrastructure network is co-ordinated with wider transport planning activities. Ensure that new housing and commercial developments are appropriately provided with EVI
Place Directorate Leadership	0.01	Leadership (Informed)	Ensure wider Place (or equivalent department) initiatives are aware of EV infrastructure network expansion and are in a position to identify and benefit from synergies.

5.5.3. Phased project plan

A phased project plan has been developed for the consideration of ELC. The plan highlights the main steps in the process of going from site selection and tendering for a partner though to commissioning of EVI. This plan does not include a timeline as many tasks will have internal dependencies which Cenex is unaware of.

Site selection and feasibility study

The purpose of this step is to understand internally what sites are being targeted for EVI development along with the numbers and types of EVI that are being installed. Understanding this prior to tendering will ensure that the most suitable tender responses are selected and will allow ELC to discard any that do not meet the initial plan. This should not stop any discussion between ELC and a partner once they are selected as there may be intricacies to site selection that the partner may be able to shed light on. Some of the tasks within this step are outlined below.

- Assess areas of EVI demand in ELC and create list of chosen sites and rank them on a Red-Amber-Green scale of commercial viability;
- Request LV/HV maps from DNO;
    - There are several independent DNOs (iDNOs) in the ELC area, including SSEN and Energetics. There is potential of capex reduction using an iDNO for connections. Subsequently references to DNOs include iDNOs, for simplicity.
- Initial desktop survey of sites to narrow list of sites based on access to electrical grid connections and suitability of site for EVI;
- Site visit to identify any additional constraints and to determine most suitable location of EVI on site;
- Determine number of chargepoints and type at each site;
- Request specific grid connection quotes from DNO;
- Analysis of DNO reports;
- Create proposal including locations, EVI types and numbers;
- Assess Red-Amber-Green status;
- Gain internal approval for proposal; and
- Create communication plan to ensure all relevant stakeholders are engaged.

Apply for available funding

The *Leverage Estate* option allows for ELC to continue to access grant-funding. At this stage, the initial proposal of EVI rollout should form the backbone of any funding request.

- Using the proposal as a basis, apply for any available grant-funding to develop EVI network.

Tender

Once there is internal consensus on an EVI portfolio and there is an option of funding, ELC should go out to tender for partners to support the roll-out of EVI.

- Create tender based on the proposal and anticipated funding;
- Receive and assess submissions; and
- Select partner(s) and sign contracts.

Deployment initiation.

The purpose of this step is to define a final plan for EVI deployment, accounting for input from the partner and any changes to funding that have occurred, this should then translate through to quotes and contracts.

- Select and mobilise partner, contractors and subcontractor;
- Finalise sites and EVI numbers and types with partner(s);
- Finalise installation quote;
- Agree contract; and
- Raise Traffic Regulation Order (TRO) and permits (if required).

Progress with electrical POC

As the initial engagement with the DNO should have already been completed, this step is about defining when the DNO works commence so that the dates and times can be added to the project plan and the meter connection can be planned in.

- Request DNO Installation date;
- Raise meter installation date (internally or externally); and
- TRO application.

Site Approvals

The purpose of this step is to develop and share an understanding of the construction plan with all relevant parties.

- Produce construction phase plan;
- Produce risk assessment & method statements; and
- Communicate plan with all relevant stakeholders.

Equipment Procurement

This step ensures that all the required equipment that is purchased so that it is available for the construction steps.

- Civils;
- Electrical;
- EV chargepoints; and
- Signage, where relevant.

Equipment Delivery

The purpose of this step is to track delivery of all equipment required for the project and ensure that everything that is needed is delivered on time.

- Civils;
- Electrical;
- EV chargepoints; and
- Signage, where relevant.

Construction and Commissioning Process (Civils)

This step will highlight the aspects of construction of civils and should be developed with input from the CPO's and ELC's contractors. The purpose is to ensure that all civils are completed within the time allocated and to the cost and quality required.

Construction - DNO connection

This step will highlight the aspects of the DNO connection and should be developed with input from the DNO. It should also be used to understand what works are being completed by the DNO and if any of the contestable works are completed by a third party.

Construction - Meter Installation by Energy Supplier or 3rd party supplier

This step will highlight the aspects of meter installations. The purpose is to ensure that all installations are completed within the time allocated and to the cost and quality required. It should also identify who is responsible for different aspects of the installations, be it contractors or internal teams.

Construction and Commissioning Process (Electrical & Reinstatement)

This step is essential in ensuring that the EVI installed, and any parking bays are of the quality required and that it is all up to standard and meets regulation.

- Snagging, Testing and Commissioning;
- Signage, where relevant;
- Bay Marking, where relevant; and
- Commissioning Report.

Close out

This purpose of this step is to ensure that all paperwork including certificates and registration document are completed and held by the relevant party. It also ensures that if there are any lessons that have been learnt that they are shared to improve any future projects.

- Handover Documents;
- Lesson Learn session; and
- Chargepoint Registration on National Chargepoint registry and other national systems.

Final site sign-off

The purpose of this step is to ensure all other tasks have been completed and that the infrastructure is commissioned and live.

Maintenance - Supplier Operating Network

The purpose of this step is to ensure that the operation of the network is being provided at a high quality through the monitoring of SLAs and response to any issues.

6. Conclusion

ELC aim to have an EVI network that provides equitable access to EVI at fair tariffs no matter where residents live or what type of property they live in. The county currently has a well-developed and robust, revenue generating EVI network. However, this has been funded largely through central government grant-funding which is ramping down as private investment in the sector grows, albeit unevenly. To enable ELC to continue to develop their EVI network with less reliance on grant-funding a partnership approach with at least two private organisations will be required.

ELC desire to retain some control over aspects such as choice of locations of EVI and end-user tariffs, this will ensure that they can have an input towards equitable access to EVI and fair tariffs. ELC will retain the ability to create and manage testbed sites for innovation and will likely continue to directly operate some chargepoints in order to retain knowledge and practical experience and put it in a good position to take over failing operations as a last resort.

A range of alternative delivery options have been assessed, which has shown a *Leverage Estate* option to be the strongest.

The most effective way to deliver this is a blend of the public-private commercial partnership *External Operator* and *Concession* commercial arrangements, offering a sliding scale of risk, revenue, control, and responsibility between the parties involved for both current and planned EVI. ELC need to offer incentives to private parties to gain the desired level of control and contract features.

The primary incentive is found in the current EVI estate which is owned by ELC and can therefore be used as leverage in negotiations. Offering a CPO a ready-made, revenue generating network is a powerful lever that is assessed to have potential to reduce contract lengths, lower tariffs and encourage the installation of EVI in less commercially attractive locations.

A second lever is providing a partner access to ELC's energy purchasing prices. ELC can access lower cost and less variable rates for energy, and by offering this to the partner it should improve the business case and allow the partner to offer more attractive terms.

It is expected that within this arrangement, capital costs will be shared. ELC will fund the feeder cabinet and retain ownership of the groundworks connecting it to the chargepoints. The partner(s) will fund the chargepoints themselves and cover all operating costs, including reimbursing ELC for all costs of the purchased energy, including meter costs. Revenue generated from charging events will then be shared between ELC and the partner(s) so that ELC can recoup any non-grant-funded capital costs and potentially make a surplus which can be funnelled back into EVI support.

To achieve this, there is a need to avoid exclusivity in the EVI market. This ensures there is competition and diversification built into the network. It is recommended that the tendering process allows for bids across the different types of chargepoints to contract at least two providers.

Concession style contracts that are currently being offered for exclusively new EVI are typically upwards of 10 years, with some up to 20 or 25 years in length. Long contracts could open ELC up to numerous risks with limited options to break the contract if the partner is not operating effectively. It should be possible to reduce contract lengths and improve the business case using the levers ELC has, such as the existing network and access to cheaper electricity rates. ELC should aim for a seven-year contract with a break point at year five and an optional two-year extension at year seven, this gives ELC one option to exit the agreement early and one to extend.

Certain ELC sites may be suitable for High-Power Journey chargepoints (and amenities), like the Wallyford Journey Hub. For these sites a land lease approach will support further deployment of EVI.

No matter what the commercial arrangement looks like, robust contract and project management should be implemented to ensure that the desired outcome of the network is reached. A list of SLAs including target numbers of chargepoints to be installed, the percentage installed in less commercially attractive areas and the price of end-user tariffs should be robustly managed. Doing so will ensure an equitably accessible and fairly priced EVI network is developed.

ELC is in a strong position to attract desirable commercial offers from private partners to develop and strengthen the EVI network, which will maintain its leading position and continue to deliver on its environmental and air quality goals.

List of Tables

Abbreviations

AC	Alternating Current
CCS	Crown Commercial Services
DC	Direct Current
DNO	Distribution Network Operator
ELC	East Lothian Council
EV	Electric Vehicle
EVI	Electric Vehicle Infrastructure
EVIF	Electric Vehicle Infrastructure Fund
KPI	Key Performance Indicator
kW	kiloWatt
kWh	kiloWatt-hour
LA	Local Authority
LGVs	Light Goods Vehicle
ORCS	On-street Residential Chargepoint Scheme
OZEV	Office for Zero Emission Vehicles
NCR	National Chargepoint Registry
PiV	Plug-in Vehicle
PPCP	Public-Private Commercial Partnership
SLA	Service-Level Agreement
TRO	Traffic Regulation Order
UK	United Kingdom
UKIB	UK Infrastructure Bank
ULEV	Ultra-Low Emission Vehicle
VAT	Value Added Tax
WPT	Wireless Power Transfer

7. Appendix A: Assessment of Commercial Arrangements and Financing Combinations

To condense the options into a shortlist, the available commercial arrangements were scored against four aspects, risk, revenue, control and responsibility. Following this, weightings were applied to different types of EVI based on their power output. The scoring aspects and finally the funding sources were weighted against the types of EVI. The scoring aspects are outlined below:

- Risk – This aspect refers to something that might occur, and if it does, will impact on the project's objectives of cost, time, performance, and quality. Some example risks associated with EVI are regulatory change, technology obsolescence and utilisation.
- Revenue – This aspect covers the percentage share of income that is retained by ELC due to the contractual arrangements.
- Control – This aspect considers the features of the EVI network that ELC will be able to decide upon or have an input in. These features include the technical specifications of the EVI, the locations of the individual chargepoints and tariffs.
- Responsibility – This aspect accounts for the staffing resource that ELC will need to commit to the given commercial agreement. This covers responsibility for planning, operations, customer service, purchase of electricity and decommissioning.

Through the scoring and weighting analysis, Table 19 below is generated. The higher the score in the matrix, the more favourable the option is to ELC. The main theme from this is a preference for EVI to be funded externally through either central government or a private organisation. Within this assessment, there is also a preference for On-street or Destination EVI to be secured through an arrangement that offers more control so that ELC can ensure charging equity such as an own and operate or public private commercial partnership.

Table 19: Commercial agreements and funding source matrix.

		LA funding	Central government funding	Private funding (Asset financing)	Supplier/operator/partner funded
Slow	Own and operate	0.38	2.28	0.38	0.76
	Public, private commercial partnership	0.34	2.04	0.34	0.68
	Concession	0.31	1.86	0.31	0.62
	Lease	0.22	1.32	0.22	0.44
Standard	Own and operate	0.38	2.28	0.38	0.76
	Public, private commercial partnership	0.34	2.04	0.34	0.68
	Concession	0.31	1.86	0.31	0.62
	Lease	0.22	1.32	0.22	0.44
Fast	Own and operate	0.34	1.7	0.34	1.02
	Public, private commercial partnership	0.32	1.6	0.32	0.96
	Concession	0.3	1.5	0.3	0.9
	Lease	0.26	1.3	0.26	0.78
Rapid	Own and operate	0	0.9	0	0.9
	Public, private commercial partnership	0	1.2	0	1.2
	Concession	0	1.5	0	1.5
	Lease	0	2.1	0	2.1
Ultra-rapid	Own and operate	0	0.9	0	0.9
	Public, private commercial partnership	0	1.2	0	1.2
	Concession	0	1.5	0	1.5
	Lease	0	2.1	0	2.1

8. Appendix B: Options appraisal

The full options appraisal showing the detailed analysis of the options is available in the attached excel file named – Options appraisal.

9. Appendix C: Risk register

The full risk register showing all identified risks is available in the attached excel file named – Risk register.

cenex

Lowering your emissions through innovation in transport and energy infrastructure

Transport

Energy Infrastructure

Knowledge & Enterprise

Cenex
Holywell Building,
Holywell Park,
Ashby Road,
Loughborough,
Leicestershire,
LE11 3UZ

Tel: **+44 (0)1509 642 500**
Email: **info@cenex.co.uk**
Website: **www.cenex.co.uk**
Twitter: **@CenexLCFC**
LinkedIn: **Cenex**

Appendix 2

CATEGORY	Do Nothing		Own and Operate		Part-sell estate		Leverage estate (PPCP or Concession)		Full sale estate	
	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI
WHO OWNS?										
Grid connection	LA	Supplier	LA	LA	LA	LA/Supplier	LA	LA	Supplier	Supplier
Grid connection to feeder pillar	LA	Supplier	LA	LA	LA	LA/Supplier	LA	LA	Supplier	Supplier
Feeder pillar	LA	Supplier	LA	LA	LA	LA/Supplier	LA	LA	Supplier	Supplier
Groundworks to chargepoints	LA	Supplier	LA	LA	LA	LA/Supplier	LA	LA	Supplier	Supplier
Chargepoints	LA	Supplier	LA	LA	LA/Supplier	LA/Supplier	LA/Supplier	LA/Supplier	Supplier	Supplier

CATEGORY	Do Nothing		Own and Operate		Part-sell estate		Leverage estate (PPCP or Concession)		Full sale estate	
	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI	Existing EVI	Implications for future EVI
WHO INVESTS?	Medium	Low	Medium	High	Low-Medium	Medium	Low	Medium	Low	Low
CAPEX	LA secured funding through central government or through LA funding for EVI.	No further funding required.	LA secured funding through central government or through LA funding for EVI.	LA to prioritise funding through central government, where this is unavailable or when funding runs out, funding is to be sought from private financing and if required LA own funding.	Existing EVI has been funded through central government funding topped up with LA funding.	Central government funding is used to fund on-street and destination EVI, where this is unavailable Private financing is to be sought and topped up with LA funding where required.	Existing EVI has been funded through central government funding topped up with LA funding.	LA to access central government funding and potentially use LA funding to contribute to EVI rollout this will be complimented by private sector investment for all EVI in the region.	LA will gain financially from the sale of the assets, the value of these are currently unknown as this approach has not been trialled, as far as Cenex are aware.	Private sector will bare all capital costs associated with EVI.
OPEX	LA must continue to fund operational costs such as staff resource and any O&M costs not covered by contracts or warranties. When EVI reaches end of life chargepoints are scrapped with any costs paid for by the council.	No further funding required.	LA must continue to fund operational costs such as staff resource and any O&M costs not covered by contracts or warranties.	LA to fund operational costs such as staff resource and any O&M costs not covered by contracts or warranties.	LA must continue to fund operational costs such as staff resource and any O&M costs not covered by contracts or warranties for on-street and destination EVI. After selling off Journey EVI the opex will be covered by the private sector.	LA will fund operational costs such as staff resource and any O&M costs not covered by contracts or warranties for on-street and destination EVI. Private sector will fund the opex for Journey chargers.	All operational costs to be covered by a revenue split with the partner CPO. The only burden on the LA will be staffing costs for contract management.	All operational costs to be covered by a revenue split with the partner CPO. The only burden on the LA will be staffing costs for contract management.	The LA will bear none of the operating costs associated with EVI.	Private sector will bare all opex costs associated with EVI.
WHOSE CONTROL?	High	Low	High	High	Medium	Medium	Medium	Medium	Low	Low
Technical specification	The LA retains control for deciding the type of charging EVI installed.	LA has no input to future EVI deployment in the region, private sector is left to deploy EVI.	The LA retains control for deciding the type of charging EVI installed.	The LA retains control for deciding the type of future charging EVI installed.	The LA retains control for deciding the type of future charging EVI installed. Once Journey chargers are sold to the private sector they will be in control of the technical specifications of the EVI and may change what has already been installed.	The LA retains control for deciding the type of future on-street and destination charging EVI installed. The private sector controls the type of future journey EVI.	The type of EVI used for on-street, destination and journey charging will be agreed between the LA and the CPO	The type of EVI used for on-street, destination and journey charging will be agreed between the LA and the CPO	The LA has selected the existing EVI technology, however, once the assets are sold there is no guarantee that the CPO will retain the same technology.	The private sector CPO will decide all technical specifications of future EVI.
Location choices	The LA retains control for selecting the locations of charging EVI.	LA has no input to future EVI deployment in the region, private sector is left to deploy EVI.	The LA retains control for selecting the locations of charging EVI.	The LA retains control for selecting the future locations of charging EVI.	The LA retains control for deciding the locations of charging for on-street and destination EVI installed. Once Journey chargers are sold to the private sector they will be in control of these locations but will likely continue to operate EVI at these locations.	The LA retains control for selecting the future on-street and destination charging EVI locations. The private sector decides locations for future Journey EVI.	The locations for on-street, destination and journey EVI will be agreed between the LA and the CPO.	The locations for on-street, destination and journey EVI will be agreed between the LA and the CPO.	The LA has selected the existing EVI locations, however, once the assets are sold there is no guarantee that the CPO will retain chargepoints at these locations .	The private sector CPO will decide all locations of future EVI.
End user tariff	The LA retains control over setting the tariff that the end user pays for charging.	LA has no input to future EVI deployment in the region, private sector is left to deploy EVI.	The LA retains control over setting the tariff that the end user pays for charging.	The LA retains control over setting the future tariff that the end user pays for charging.	The LA retains control for deciding the tariffs for on-street and destination charging. Once Journey chargers are sold to the private sector they will be in control of the tariffs for this EVI and may change the current tariffs.	The LA retains control over setting the future tariff that the end user pays for on-street and destination charging. The private sector is in control of setting future tariffs for journey EVI.	The end-user tariffs for on-street, destination and journey EVI will be agreed between the LA and the CPO.	The end-user tariffs for on-street, destination and journey EVI will be agreed between the LA and the CPO.	Once the assets are sold the private sector CPO will set all tariffs.	The private sector CPO will decide all tariffs of future EVI.
WHOSE RESPONSIBILITY?	High	Low	High	High	Medium	Medium	Medium	Medium	Low	Low
Planning approvals	Planning will already be approved for existing EVI, however, LA is responsible for all planning.	LA has no further input in planning for EV EVI. Private sector to take on all planning work for EVI.	Planning will already be approved for existing EVI, however, LA is responsible for all planning.	LA is responsible for all planning of future EVI.	Planning will already be approved for existing EVI, however, LA is responsible for all planning for on-street and destination EVI and Private sector will be responsible for Journey charging planning.	LA is responsible for all planning for on-street and destination EVI and Private sector will be responsible for Journey charging planning	Planning will already be approved for existing EVI, however, private sector partner will be responsible for all planning approvals and management of them.	Private sector partner will be responsible for all planning approvals and management of them.	All planning for existing infrastructure will have been approved, however, once assets are sold to private sector they will then be responsible for the planning .	The private sector will be responsible for all planning applications.
Grid connection	LA is responsible for owning, operating and maintaining the grid connections. This likely requires little to no maintenance and some responsibility may fall on the DNO.	Any new grid connections for EV EVI are owned and operated by the private sector.	LA is responsible for owning, operating and maintaining the grid connections. This likely requires little to no maintenance and some responsibility may fall on the DNO.	LA is responsible for owning, operating and maintaining the grid connections of future EVI. Some of this work will be required to be completed by the DNO but some work can be contested and completed either by the LA or a third party.	Grid connections of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing grid connections. This likely requires little to no maintenance and some responsibility may fall on the DNO.	LA is responsible for installation, operation and maintenance of grid connections for on-street and destination EVI. The private sector is responsible for grid connections for journey EVI.	Grid connections of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing grid connections. This likely requires little to no maintenance and some responsibility may fall on the DNO.	LA is responsible for installation, operation and maintenance of grid connections for on-street and destination EVI. This likely requires little to no maintenance and some responsibility may fall on the DNO.	Once EVI is sold off the grid connection becomes the responsibility of the private sector	The private sector will be responsible for all grid connections.
Grid connection to feeder pillar	LA is responsible for owning, operating and maintaining the grid connections to feeder pillars. This likely requires little to no maintenance.	Any new grid connections to feeder pillars for EV EVI are owned and operated by the private sector.	LA is responsible for owning, operating and maintaining the grid connections to feeder pillars.	LA is responsible for the installation and operation and maintenance of the grid connections to feeder pillars.	Grid connections to feeder pillars of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing grid connections to feeder pillars.	LA is responsible for the installation, operation and maintenance of grid connections to feeder pillars for on-street and destination EVI. The private sector is responsible for the journey EVI grid connections to feeder pillar.	Grid connections to the feeder pillar of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing grid connections to feeder pillars. This likely requires little to no maintenance and some responsibility may fall on the DNO.	LA is responsible for installation, operation and maintenance all grid connections to feeder pillars. Once installed this likely requires little to no maintenance and some responsibility may fall on the DNO.	Once EVI is sold off the grid connection to the feeder pillar becomes the responsibility of the private sector	The private sector will be responsible for all grid connections to feeder pillars.
Feeder pillar	LA is responsible for owning, operating and maintaining the feeder pillars until decommissioning.	Any new feeder pillars for EV EVI are owned and operated by the private sector.	LA is responsible for owning, operating and maintaining the feeder pillars.	LA is responsible for the installation, operation and maintenance of the feeder pillars to future EVI. This may be subcontracted.	Feeder pillars for of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing feeder pillars.	LA is responsible for the installation, operation and maintenance of the feeder pillars for on-street and destination EVI. The private sector is responsible for the journey EVI feeder pillars.	Feeder pillar of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing feeder pillars.	LA is responsible for installation, operation and maintenance all feeder pillars.	Once EVI is sold off the feeder pillar becomes the responsibility of the private sector	The private sector will be responsible for all feeder pillars.
Groundworks to chargepoints	LA is responsible for owning, operating and maintaining the groundworks, however, this likely requires minimal effort if required at all.	Any new groundworks are installed, owned and operated by the private sector.	LA is responsible for owning, operating and maintaining the groundworks, however, this likely requires minimal effort if required at all.	LA is responsible for the installation, operation and maintenance of the groundworks to future EVI. This may be subcontracted.	Groundworks for of existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing groundworks.	LA is responsible for the installation, operation and maintenance of the feeder pillars for on-street and destination EVI. The private sector is responsible for the journey EVI feeder pillars.	groundworks for existing EVI are already in place therefore, it is recommended that the LA retains ownership of these assets. LA is responsible for owning, operating and maintaining all existing groundworks.	LA is responsible for installation, operation and maintenance all groundworks.	Once EVI is sold off the groundworks to the chargepoint becomes the responsibility of the private sector	The private sector will be responsible for all groundworks to chargepoints.
Chargepoint Installation	LA is responsible for the maintenance of chargepoint installations, however most will be covered under warranty or a maintenance package so there will be little burden on the LA.	Any new chargepoints for EVs are installed, owned and operated by the private sector.	LA is responsible for the maintenance of chargepoint installations, however most will be covered under warranty or a maintenance package so there will be little burden on the LA.	LA is responsible for future EVI installations and the maintenance of these installations, however most will be covered under warranty or a maintenance package so there will be little burden on the LA.	LA is responsible for the maintenance of on-street and destination EVI installations and once journey EVI is sold off, the responsibility for these is handed over to the private sector.	LA is responsible for the installation of on-street and destination EVI and the private sector is responsible for the installation of Journey EVI.	Existing chargepoints have already been installed but the responsibility for maintenance of these units are to be handed to the private sector partner.	Private sector partner will be responsible for all installation and maintenance of EVI.	The existing chargepoint assets above the ground will be sold off so will become the responsibility of the private sector.	The private sector will be responsible for all chargepoint installations.
Operations	LA is responsible for operation of existing EVI, however, this is likely subcontracted so will require little effort from the LA other than contract management.	Private sector will operate any future chargepoints which gives LA no control over the terms of the operation.	LA is responsible for operation of existing EVI, however, this is likely subcontracted so will require little effort from the LA other than contract management.	LA is responsible for operation of existing EVI, however, this is likely subcontracted so will require little effort from the LA other than contract management.	LA is responsible for operation of existing on-street and destination EVI, however, this is likely subcontracted so will require little effort from the LA other than contract management. Once the Journey EVI is sold off the responsibility of the operation of these chargepoints will fall on the private sector.	LA is responsible for the operation of on-street and destination EVI, however, this is likely subcontracted so will require little effort from the LA other than contract management. The private sector is responsible for the operation of Journey EVI.	Responsibility for the operation of existing EVI is to be handed to the private sector partner. With input from LA.	Private sector partner will be responsible for all operations of EVI. With input from LA.	The operation of all existing chargepoints will become the responsibility of the private sector.	The private sector will be responsible for all chargepoint operations.
Insurance	LA is responsible for insuring EVI but may be subcontracted or covered under wider LA insurance policies.	Private sector is responsible for any future chargepoint insurance.	LA is responsible for insuring EVI but may be subcontracted or covered under wider LA insurance policies.	LA is responsible for insuring EVI but may be subcontracted or covered under wider LA insurance policies.	LA is responsible for insuring on-street and destination EVI but may be subcontracted or covered under wider LA insurance policies. Once journey EVI is sold off the private sector will be responsible for the insurance of these chargepoints.	LA is responsible for insuring on-street and destination EVI but may be subcontracted or covered under wider LA insurance policies. The private sector will be responsible for the insurance of Journey EVI	Private sector partner to be responsible for insuring Existing EVI.	Private sector partner to be responsible for insuring all EVI.	The insurance of all existing chargepoints will become the responsibility of the private sector.	The private sector will be responsible for all EVI insurance.
Customer service	LA holds the responsibility for customer service however, this is likely subcontracted so will require little effort from the LA other than contract management.	Private sector will be responsible for the customer service of chargepoints for any future developments.	LA holds the responsibility for customer service however, this is likely subcontracted so will require little effort from the LA other than contract management.	LA holds the responsibility for customer service however, this is likely subcontracted so will require little effort from the LA other than contract management.	LA holds the responsibility for customer service for on-street and destination EVI however, this is likely subcontracted so will require little effort from the LA other than contract management. Once Journey EVI is sold off the private sector will be responsible for the customer service of these chargepoints.	LA holds the responsibility for customer service for on-street and destination EVI however, this is likely subcontracted so will require little effort from the LA other than contract management. The private sector is responsible for the customer service of Journey EVI.	Private sector partner to be responsible for customer service for existing EVI.	Private sector partner to be responsible for customer service for all EVI.	The customer service of all existing chargepoints will become the responsibility of the private sector.	The private sector will be responsible for all EVI customer service.
Electricity purchase	LA will continue to purchase electricity for the existing EV charging EVI. As utilisation of the chargepoints increase, the amount of electricity the LA will need to purchase will increase.	The private sector will purchase all electricity for future chargepoint installations.	LA will continue to purchase electricity for the existing EV charging EVI. As utilisation of the chargepoints increase, the amount of electricity the LA will need to purchase will increase.	LA will continue to purchase electricity for the existing EV charging EVI. As utilisation of the chargepoints increase, the amount of electricity the LA will need to purchase will increase.	LA will continue to purchase electricity for the existing on-street and destination EVI. As utilisation of the chargepoints increase, the amount of electricity the LA will need to purchase will increase, however, because the journey EVI is to be sold off the total amount of electricity being purchased by the LA should drop. The Private sector will be responsible for the purchase of electricity used by journey EVI when the assets are sold.	LA will purchase electricity for on-street and destination EVI. As utilisation of the chargepoints increase, the amount of electricity the LA will need to purchase will increase. The Private sector will be responsible for the purchase of electricity used by journey EVI.	LA to be responsible for purchase of electricity which will be reimbursed through the revenue from EVI.	LA to be responsible for purchase of electricity which will be reimbursed through the revenue from EVI.	The electricity purchase for all existing chargepoints will become the responsibility of the private sector.	The private sector will be responsible for all EVI electricity purchase.
Decommissioning	LA is responsible for decommissioning chargepoints it owns. This may be subcontracted however it will most likely come at a cost to the LA.	The private sector will be responsible for decommissioning future chargepoints LA will have no control of how this will be done.	LA is responsible for decommissioning chargepoints it owns. This may be subcontracted however it will most likely come at a cost to the LA.	LA is responsible for decommissioning chargepoints it owns. This may be subcontracted however it will most likely come at a cost to the LA.	LA is responsible for decommissioning of on-street and destination EVI, however, it is expected that rather than decommissioning the old chargepoints will be replaced with new ones. This may be subcontracted however it will most likely come at a cost to the LA. When the journey EVI is sold the private sector will be responsible for decommissioning these chargepoints.	LA is responsible for decommissioning of on-street and destination EVI, however, it is expected that rather than decommissioning the old chargepoints will be replaced with new ones. This may be subcontracted however it will most likely come at a cost to the LA. The private sector will be responsible for decommissioning Journey EVI.	Private sector partner to be responsible for decommissioning of existing EVI. However, it is likely that rather than decommissioning, old EVI will be replaced with new EVI.	Private sector partner to be responsible for decommissioning of all EVI. However, it is likely that rather than decommissioning, old EVI will be replaced with new EVI.	The decommissioning of all existing chargepoints will become the responsibility of the private sector.	The private sector will be responsible for all EVI decommissioning.
WHOSE RISK?	Medium	Low-Medium	Medium	High	Medium	Medium	Low-Medium	Low-Medium	Low	Low
Technology obsolescence	The LA is at risk from the chargepoint technology becoming obsolete. This may result in chargepoints not being used reducing revenue and access to useful EVI by the public.	LA is not at risk from obsolescence as private sector will retain this risk and will have to update to new technologies if they appear to ensure revenue generation.	The LA is at risk from the chargepoint technology becoming obsolete. This may result in chargepoints not being used reducing revenue and access to useful public EVI by the public.	The LA is at risk from the chargepoint technology becoming obsolete. This may result in chargepoints not being used reducing revenue and access to useful EVI by the public. These will then need to be replaced by the LA and will bring higher capital costs.	The LA is at risk from the on-street and destination chargepoint technology becoming obsolete. This may result in chargepoints not being used reducing revenue and access to useful public EVI by the public. However, the risk is reduced by the journey EVI being owned and operated by the private sector.	The LA is at risk from the on-street and destination chargepoint technology becoming obsolete. This may result in chargepoints not being used reducing revenue and access to useful public EVI by the public. However, the risk is reduced by the journey EVI being owned and operated by the private sector.	The LA is not at risk from technology obsolescence as the private sector partner is responsible for the installation of EVI, therefore, they would be responsible for replacing the EVI with newer technology.	The LA is not at risk from technology obsolescence as the private sector partner is responsible for the installation of EVI, therefore, they would be responsible for replacing the EVI with newer technology.	Once the EVI is sold off the LA will bear no risk of technology obsolescence.	The LA will bear no risk of technology obsolescence.
Regulatory change	LA is at risk of regulation change and may incur additional costs to meet any changes that are announced. This could be around things like the accessibility of charging EVI or the requirement for a minimum payment method. However, if costs are too great the chargepoint could be decommissioned instead.	Any future installations will be completed by the private sector so they will bear any costs associated with regulatory change.	LA is at risk of regulation change and may incur additional costs to meet any changes that are announced. This could be around things like the accessibility of charging EVI or the requirement for a minimum payment method.	LA is at risk of regulation change and may incur additional costs to meet any changes that are announced. This could be around things like the accessibility of EVI or the requirement for a minimum payment method. This may increase costs associated with EVI.	LA is at risk of regulation change and may incur additional costs to meet any changes that are announced. This could be around things like the accessibility of EVI or the requirement for a minimum payment method. However the risk is reduced by the journey EVI being owned and operated by the private sector.	LA is at risk of regulation change and may incur additional costs to meet any changes that are announced. This could be around things like the accessibility of EVI or the requirement for a minimum payment method. However the risk is reduced by the journey EVI being owned and operated by the private sector.	The LA is not at risk from regulatory change as the private sector partner is responsible for the installation and operation of EVI, therefore, they would be responsible for any updates or upgrades to the EVI to conform to any new regulation.	The LA is not at risk from regulatory change as the private sector partner is responsible for the installation and operation of EVI, therefore, they would be responsible for any updates or upgrades to the EVI to conform to any new regulation.	Once the EVI is sold off the LA will bear no risk of regulatory change.	The LA will bear no risk of regulatory change.
Electricity prices	LA is at risk of increased operating costs from rising electricity prices.	Private sector will purchase electricity for any future chargepoint installations so the LA retains no future risk from electricity prices.	LA is at risk of increased operating costs from rising electricity prices.	LA is at risk of increased operating costs from rising electricity prices.	LA is at risk of increased operating costs from rising electricity prices. However the risk is reduced by the journey EVI being owned and operated by the private sector.	LA is at risk of increased operating costs from rising electricity prices. However the risk is reduced by the journey EVI being owned and operated by the private sector.	LA is at risk of increased operating costs from rising electricity prices. However, as the LA is likely able to secure favourable electricity tariffs, these risks may e able to be mitigated within the LA.	LA is at risk of increased operating costs from rising electricity prices. However, as the LA is likely able to secure favourable electricity tariffs, these risks may e able to be mitigated within the LA.	Once the EVI is sold off the LA will bear no risk of fluctuating electricity prices.	The LA will bear no risk of fluctuating electricity prices.
Utilisation	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road.	Private sector will bear the risk of any reduction in utilisation with future chargepoint installations.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road. The risk is reduced by the journey EVI being owned and operated by the private sector.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road. The risk is reduced by the journey EVI being owned and operated by the private sector.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road.	LA is at risk from a drop in utilisation levels meaning reduced revenue generation. However, existing data analysis shows an increase in utilisation is to be expected, likely due to increasing numbers of EVs on the road. The financial risk is reduced by the private sectors investment in the EVI.	Once the EVI is sold off the LA will bear no risk from utilisation of EVI.	The LA will bear no risk from utilisation of EVI.

Unique risk 1	As chargepoints are decommissioned the public perception of the LA may be damaged due to the EVI no longer working or the customer experience being worse.	No guarantee that the private sector will be able to meet demand of EV charging EVI or provide equitable access to charging EVI and fair pricing	N/A	Future high powered EVI may be prohibitively expensive and if the LA cannot afford it there may be a gap in provision.	By having the private sector operating some of the EVI there is likely to be some disconnect between the journey EVI and the on-street and destination. This could be having different access and payment methods between the chargepoints in the region. This could result in a worse customer experience.	By having the private sector operating some of the EVI there is likely to be some disconnect between the journey EVI and the on-street and destination. This could be having different access and payment methods between the chargepoints in the region. This could result in a worse customer experience.	Depending on the details of the contract with the CPO, there is a risk of being tied into a long contract with an operator that is preforming poorly and providing a poor service.	Depending on the details of the contract with the CPO, there is a risk of being tied into a long contract with an operator that is preforming poorly and providing a poor service.	The LA risk a poor public image if the private sector do not provide a suitable EVI network.	The LA risk a poor public image if the private sector do not provide a suitable EVI network.
Unique risk 2	N/A	N/A	N/A	N/A	Having no control or input into journey EVI may result in a lower standard service than the LA would like and the LA will have no way to improve the service.	Having no control or input into journey EVI may result in a lower standard service than the LA would like and the LA will have no way to improve the service.	N/A	N/A	N/A	N/A
WHOSE REVENUE?	Medium-High	Low	High	High	Low-Medium	Low-Medium	Low-Medium	Low-Medium	Low	Low
EV charging income	The LA retains all revenue from charging sessions with a share or fee continuing to go back to any subcontracted CPO. As utilisation increases revenue should increase. However, as existing units are decommissioned revenue will fall.	Private sector retains all revenue from future chargepoint installations.	The LA retains all revenue from charging sessions with a share or fee continuing to go back to any subcontracted CPO. As utilisation increases revenue should increase.	The LA retains all revenue from future charging sessions with a share or fee continuing to go back to any subcontracted CPO. As utilisation increases revenue should increase.	The LA retains all revenue from on-street and destination charging sessions with a share or fee continuing to go back to any subcontracted CPO. As utilisation increases revenue should increase. The revenue from the Journey chargers will go to the private sector operator.	The LA retains all revenue from on-street and destination charging sessions with a share or fee continuing to go back to any subcontracted CPO. As utilisation increases revenue should increase. The revenue from the Journey chargers will go to the private sector operator.	Revenue from EV charging will be split between the LA and private sector partner based on contractual agreements.	Revenue from EV charging will be split between the LA and private sector partner based on contractual agreements.	The LA will retain no revenue from the EVI usage.	The LA will retain no revenue from the EVI usage.
Ground rent	N/A	N/A	N/A	N/A	N/A	N/A	A ground rent may be applicable dependent on contractual agreements. This may further reduce the financial risk to the LA and cover staffing costs for contract management.	A ground rent may be applicable dependent on contractual agreements. This may further reduce the financial risk to the LA and cover staffing costs for contract management.	N/A	N/A

* May be subcontracted

KEY (REVENUE, CONTROL)	KEY (INVESTMENT, RISK, RESPONSIBILITY)
High	High
Medium-High	Medium-High
Medium	Medium
Low-Medium	Low-Medium
Low	Low

Transport | Energy Infrastructure | Knowledge & Enterprise

Appendix 3

cenex

Outline Electric Vehicle Infrastructure Strategy

East Lothian Council

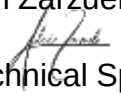
December 2022

Report details

Prepared for:

Ryan Robertson
EV Infrastructure and Roads Assets Officer
East Lothian Council
rrobertson@eastlothian.gov.uk

Prepared by:

Name: Adrián Zarzuelo Conde
Signature: 
Assistant Technical Specialist
Email:
adrian.zarzuelo.conde@Cenex.co.uk

Approved by:

Name: Chris Rimmer
Signature: 
Role: Infrastructure Strategy lead

Company details:

Cenex
Holywell Building
Holywell Park
Ashby Road
Loughborough
Leicestershire
LE11 3UZ

Registered in England No. 5371158

Tel: 01509 642 500
Email: info@cenex.co.uk
Website: www.cenex.co.uk

Terms and conditions:

Document revisions

Table 1: Document version.

Version No.	Details	Date
V0.1	First Draft	16/12/2022
V0.2	Internal Review	19/12/2022
V1.0	First report release for client review	20/12/2022
V1.1	Second release for client review	22/12/2022
V2.0	Comments from ELC incorporated and released to client	30/01/2023
V3.0	Further comments from ELC incorporated	13/04/2023
V3.1	Final internal review	14/04/2023
V4.0	Minor comments from ELC incorporated and released to client	27/04/2023

Contents

Table 2: Contents.

Transport | Energy Infrastructure | Knowledge & Enterprise

Report Navigation

Key Acronyms

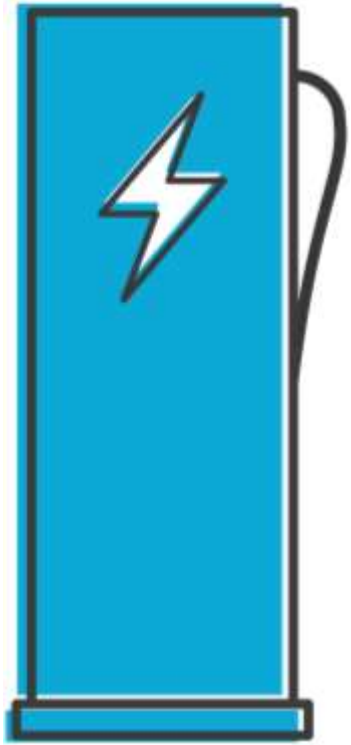
EV	Electric Vehicle
BEV	Battery Electric Vehicle
PHEV	Plug-In Hybrid Electric Vehicle
CPO	Chargepoint Operator
EVI	Electric Vehicle Infrastructure
ELC	East Lothian Council
LA	Local Authority
OZEV	Office for Zero-Emission Vehicles

Navigation

Key insights and conclusions are highlighted in orange.

Data

The report is based on data from public data and Cenex analysis as of Q2 2022, unless otherwise stated.
Sources are noted on each slide for support.



1. Introduction

Background

National Vision

This Report

Transport | Energy Infrastructure | Knowledge & Enterprise

Background

cenex

A large existing EVI estate

East Lothian Council (ELC) currently own and operate a large and varied portfolio of Electric Vehicle Infrastructure (EVI).
To-date, this network has been funded primarily through Scottish and UK Government capital grant-funding with a small amount contributed directly by ELC and private capital.

As a result, the Council is in the top-five Local Authorities (LAs) outside London for the proportion of households within a five-minute walk of a public chargepoint, before even considering planned projects.[1]

The Scottish Government has announced its intention to disperse further support via Transport Scotland's Electric Vehicle Infrastructure Fund (EVIF).

To retain and build-upon its leading position, a strategic approach is needed to respond in a consistent, coherent and coordinated manner

Top - On-street chargepoint – Eskside East: PlugShare (2022), Eskside East, https://www.plugshare.com/location/186416
Bottom - Journey chargepoints - Lindores Drive, Tranent: PlugShare (2022), Lindores Drive, Tranent, https://www.plugshare.com/location/215850
1 - https://www.field-dynamics.co.uk/research/inconsistencies-in-local-authorities-ev-charging-approach/

Transport | Energy Infrastructure | Knowledge & Enterprise

National Vision

Scottish EV Infrastructure Vision

The Scottish Government has published a vision which anticipates:

- A well-designed, comprehensive and people-focused public chargepoint network.
- An accessible and reliable public network of chargepoints that works for everyone regardless of their circumstances, fulfilling the principle of a Just Transition.
- Ensuring convenient access to charging at a fair cost for households without home charging or in rural areas.
- Private sector investment to grow the chargepoint network.
- Active and public transport choices.

This outline strategy articulates how ELC might deliver its part of the Scottish EV Infrastructure Vision

https://www.transport.gov.scot/media/51271/a-network-fit-for-the-future-draft-vision-for-scotland-s-public-electric-vehicle-charging-network-revised-march-2022.pdf

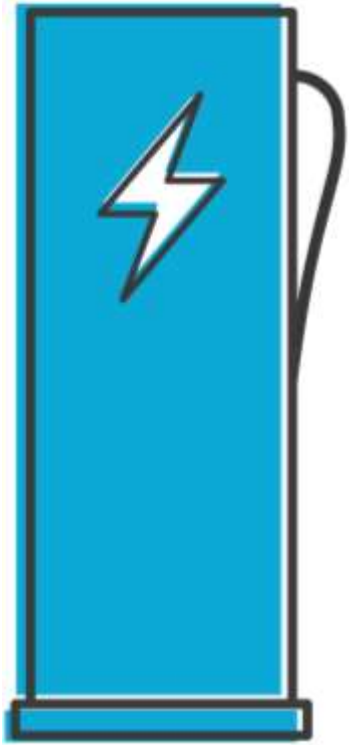
Transport | Energy Infrastructure | Knowledge & Enterprise

This Report

Brief
Cenex was commissioned by East Lothian Council (ELC) to produce an outline strategy.

Approach:
This work builds on work completed by Cenex on the options available to ELC for its existing and future EVI.
The appraisal conclusions are brought together in this report with public information, modelled projections and analysis to present the evidence to support an outline strategy.

Purpose
Whilst this report is not a full Strategy and Expansion Plan, this document does follow the Scottish Futures Trust template so that key internal and external stakeholders can be engaged with the work and emerging strategy.



Transport | Energy Infrastructure | Knowledge & Enterprise

cenex

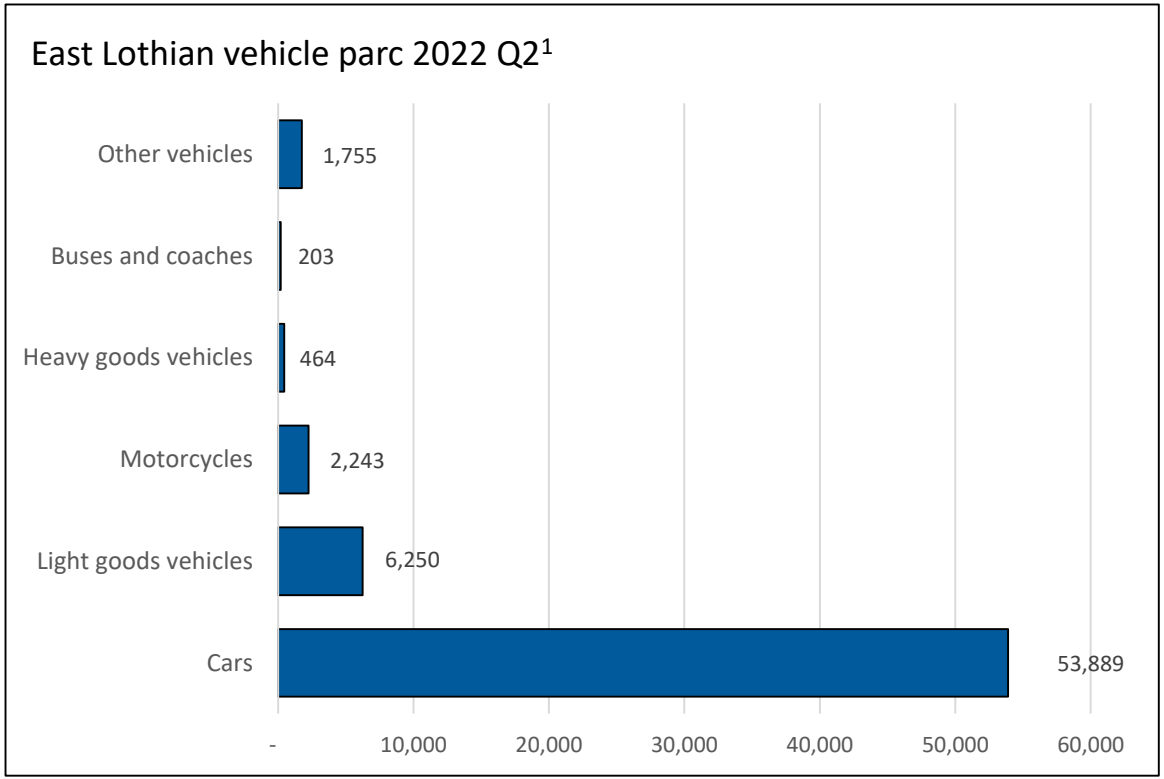
2. Current status

ELC Vehicle Parc

ELC Electric Vehicle Parc

EV Infrastructure

ELC Vehicle Parc



The majority of vehicles (all fuels) registered in the East Lothian Council area – the vehicle parc - is formed by cars and vans (92.8%) followed by motorcycles (3.5%)

The proportion of HGVs (0.7%) is lower compared to the UK (1.3%)

1– Licensed vehicles at the end of the quarter by body type, fuel type, keepership (private and company) and upper and lower tier local authority: Great Britain and United Kingdom

Transport | Energy Infrastructure | Knowledge & Enterprise

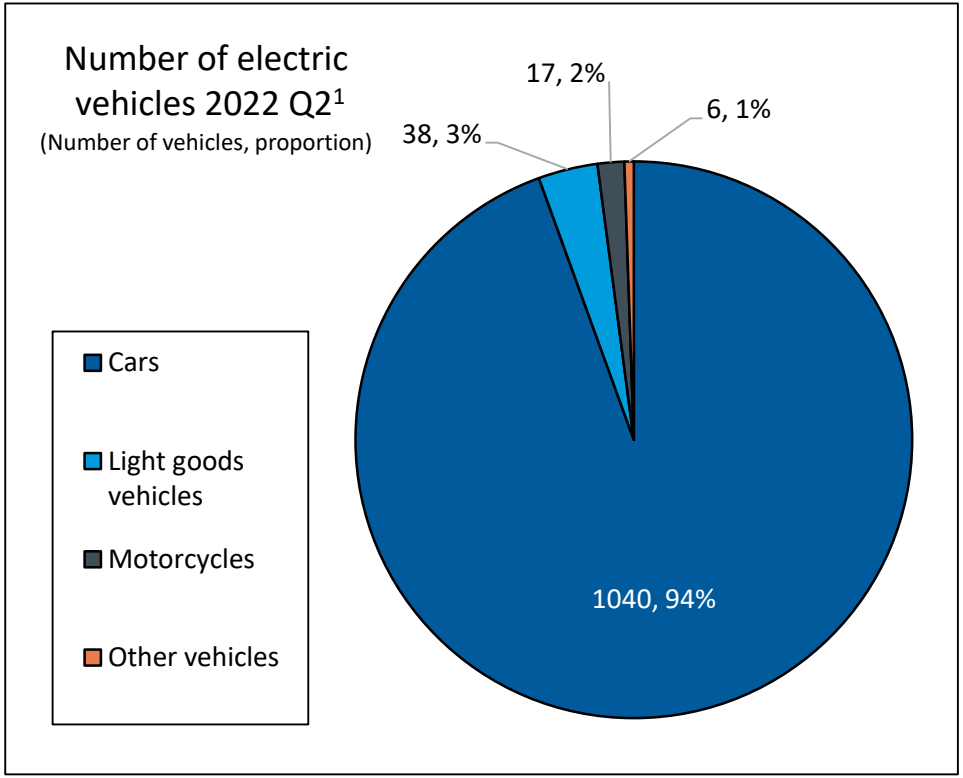
ELC Electric Vehicle Parc

The electric vehicle market is currently dominated by cars in ELC: (94.5% of EVs), followed by vans (3.5%).

The number of motorcycles has grown quickly in the last year but the numbers are still small. Also, motorcycles have lower energy requirements.

At the moment, there are no registered electric HGVs or buses in ELC.

The main electric vehicle segments are cars and vans. The remaining report focuses on these vehicle categories



1 – Licensed plug-in vehicles (PiVs) at the end of the quarter by body type, fuel type, keepership (private and company) and upper and lower tier local authority: United Kingdom

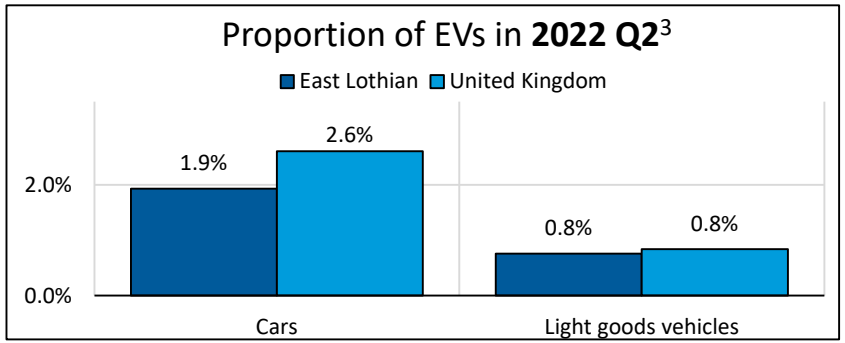
Note: Electric refers to all PiVs, not just BEVs

Transport | Energy Infrastructure | Knowledge & Enterprise

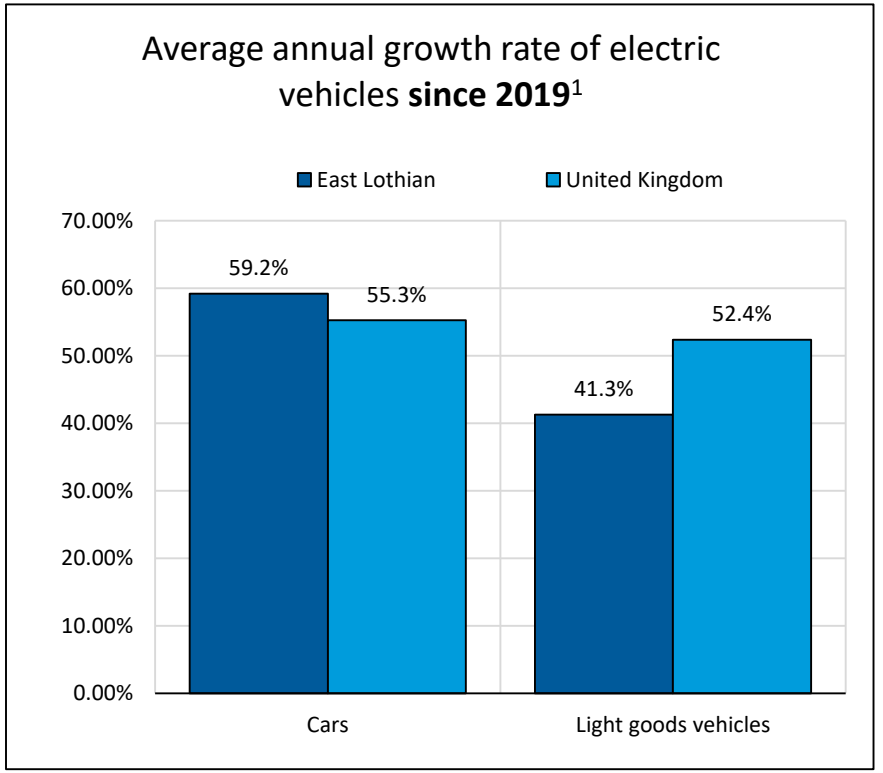
ELC Electric Vehicle Parc

The annual growth of registered electric cars has been near 60% on average for the last 3 years

Growth of LGVs has been slower but is likely to accelerate, as the van sector is the fastest growing in the UK[2]



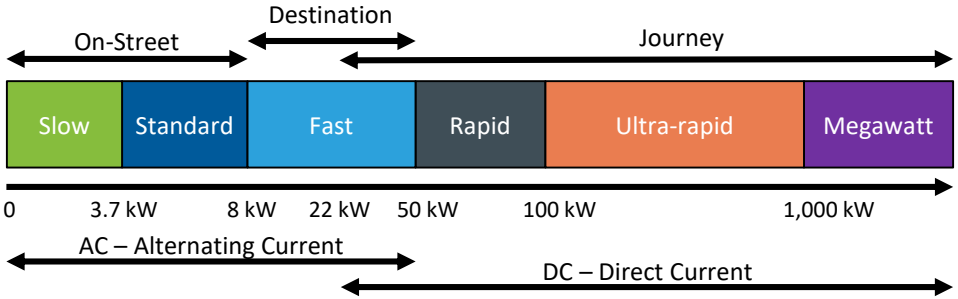
Both electric cars and vans sales have experienced rapid growth in the past few years. It has been slower for electric vans, but it is expected they will gain relevance in the upcoming years. Nevertheless, cars will continue to be the main segment for some time.



1 – Licensed plug-in vehicles (PiVs) at the end of the quarter by body type, fuel type, keepership (private and company) and upper and lower tier local authority: United Kingdom
2 – SMMT-Light-Commercial-Vehicles-Delivering-for-the-UK-economy.pdf
3 – Licensed vehicles at the end of the quarter by body type, fuel type, keepership (private and company) and upper and lower tier local authority: Great Britain and United Kingdom

Transport | Energy Infrastructure | Knowledge & Enterprise

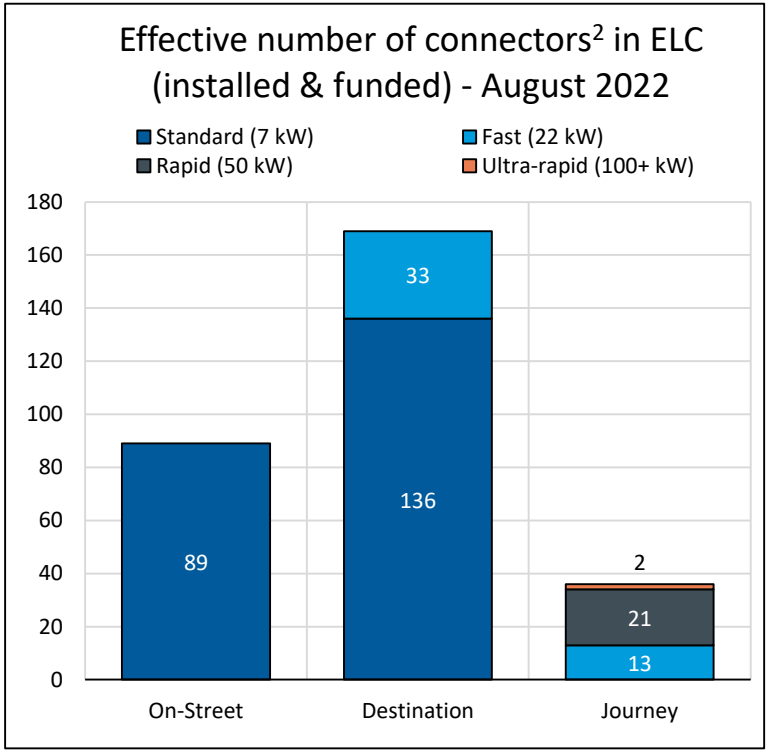
EV Infrastructure



Current EVI in East Lothian

- **On-street**: around 90 standard connectors (all 7 kW) already installed or planned/funded
- **Destination**: near 170 connectors in total: 33 fast (all 22 kW), and 136 standard (all 7 kW) connectors
- **Journey**: near 40 connectors in total: 2 ultra-rapid (150 kW) and 21 fast (50 kW) chargers of which 13 have an additional fast (22 kW) connector

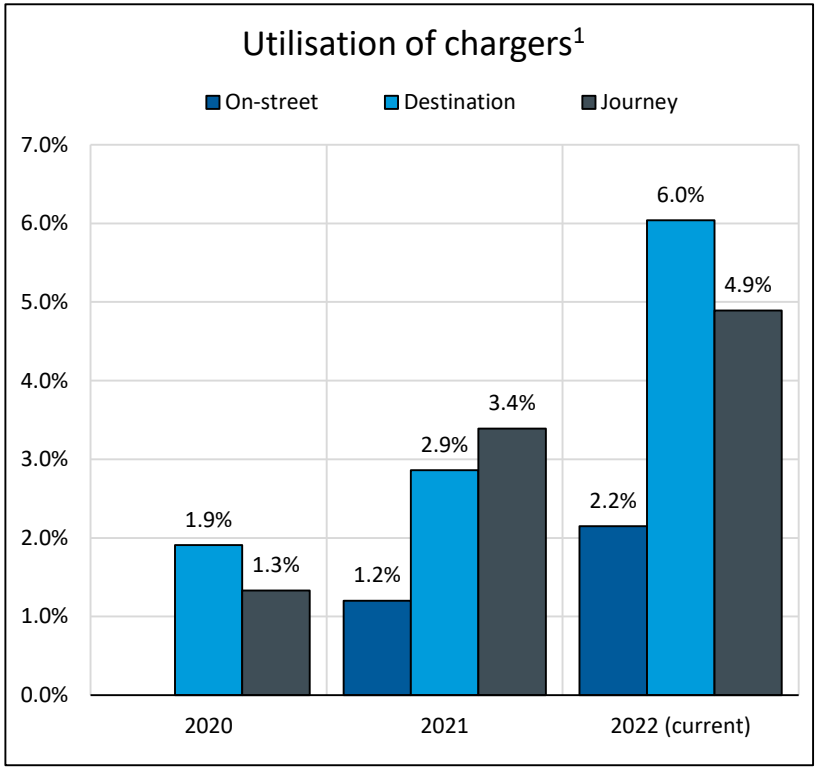
For an LA of its size, ELC has a large and growing EVI estate, covering multiple use-cases



1 – In 2022 all chargers in ELC within each category had the same power rating

2 – Effective number of connectors refers to the connectors that can deliver their maximum power simultaneously (e.g. 22 kW chargers with two connectors but only 22 kW of installed power are counted as one effective connector, however the majority of ELC chargers at this speed have 2 effective sockets (2x22 kW); Journey chargers with 72 kW of installed power are counted as one fast (22 kW) connector and one rapid (50 kW) connector, corresponding to the possibility of having simultaneous AC and DC sessions). Data comes from Cenex analysis of ELC EVI operating data

EV Infrastructure



Energy-based utilisation of chargers by location and year[1]

	2020	2021	2022
On-street	N/A	1.2%	**2.2%**
Destination	1.9%	2.9%	**6.0%**
Journey	1.3%	3.4%	**4.9%**

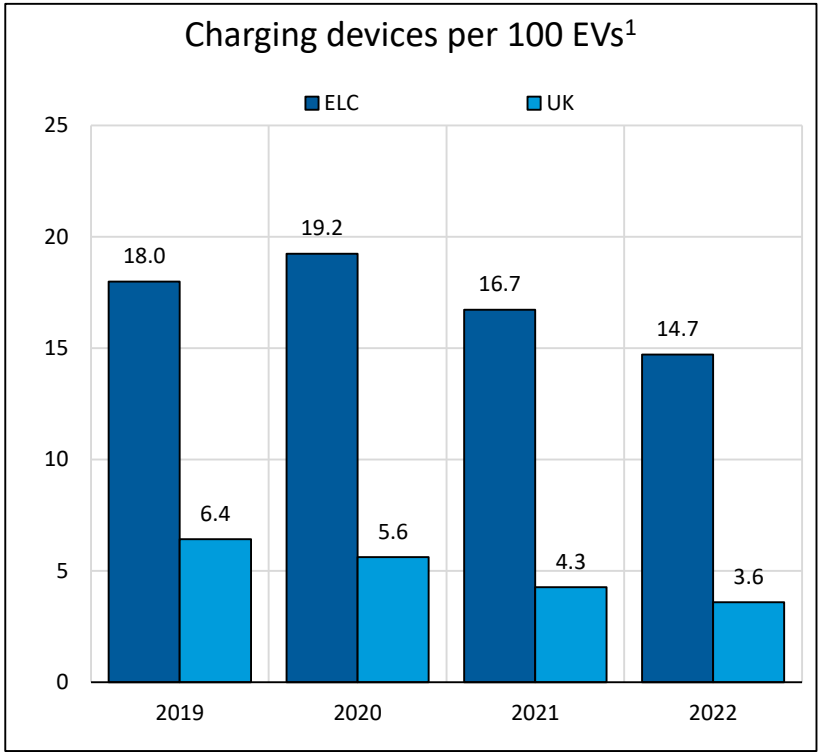
Utilisation is a key operational factor of EVI, although there is not good data to support comparison with other LAs. Utilisation of chargers remains low, but has experienced a rapid growth in the last two years. It is expected to increase more due to the projected growth of EV sales and increased general awareness/knowledge about EVI.

Utilisation is a key factor for EVI. Although it has been low in the past it is expected that it will continue to improve through to 2030

1 – Energy based utilisation is the energy delivered compared to the theoretical maximum that could be delivered according to the charger power rating and the time that it was available. Figures come from Cenex analysis of ELC EVI operational data

Transport | Energy Infrastructure | Knowledge & Enterprise

EV Infrastructure



ELC strategy has aimed to plan ahead of demand, resulting in one of the largest provisions of chargers per EV of the UK. This has had an impact on the utilisation, which has been relatively low in previous years due to the high availability of chargers.

The increase in utilisation seen in recent years is partly due to a more rapid growth of the number of EVs than the number of chargers - the same trend is observed for the UK. It is expected that fewer chargers per EV will be needed in the future as the utilisation keeps improving (or conversely, that the utilisation will be higher because more EVs will be in the roads)

Utilisation is hardly comparable between ELC and the UK because the ratio of chargers per EV is much greater in ELC. It is expected that this ratio will decrease in the future as the EV parc grows and utilisation of chargers improves.

1 – Vehicle licensing statistics: July to September 2022 - GOV.UK (www.gov.uk), Electric vehicle charging device statistics: October 2022 - GOV.UK (www.gov.uk)

Transport | Energy Infrastructure | Knowledge & Enterprise

cenex

3. Projections & Gap Analysis

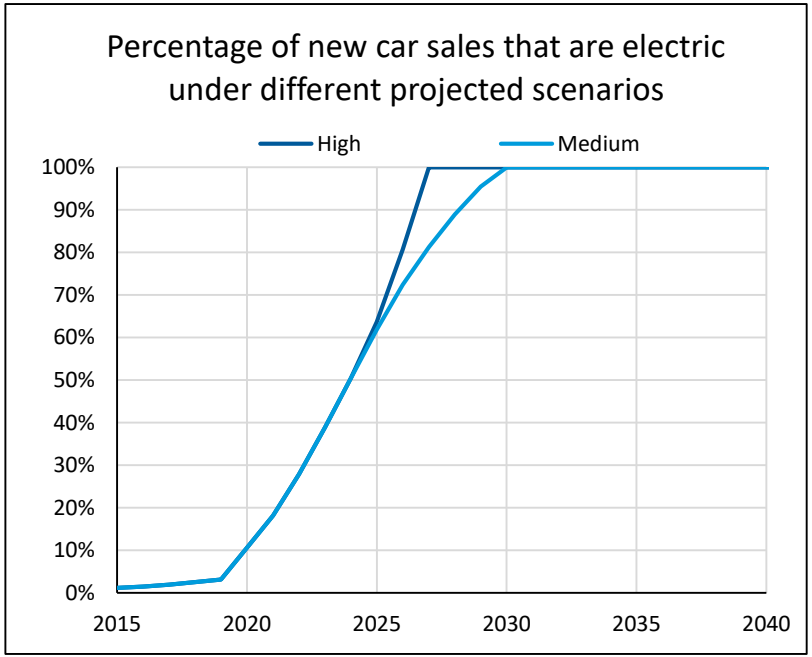
Scenarios

Vehicle Parc Transition

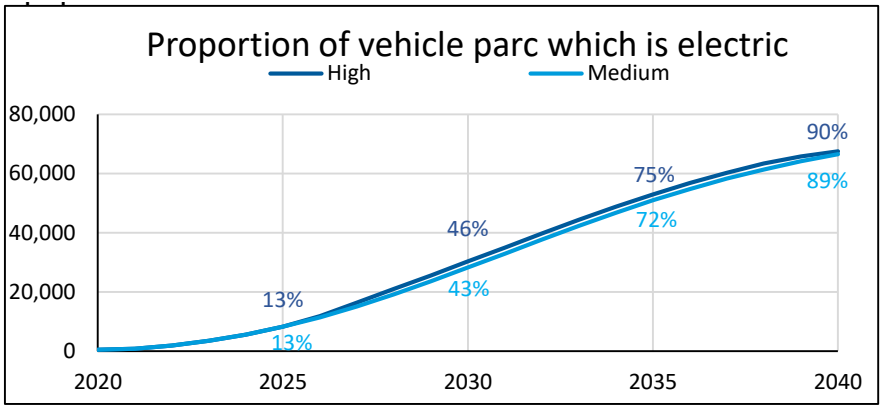
Energy demand

Required EV Infrastructure

Scenarios



Two scenarios are modelled, based on the **ZEV Mandate**[1]. In the figure on the left, the **Medium** scenario assumes a slow-down of new vehicle sales when nearing 2030, whereas the rate of electric sales in the **High** scenario keeps increasing, reaching a 100% of car and van sales by 2027. The resulting electric car and van projections are



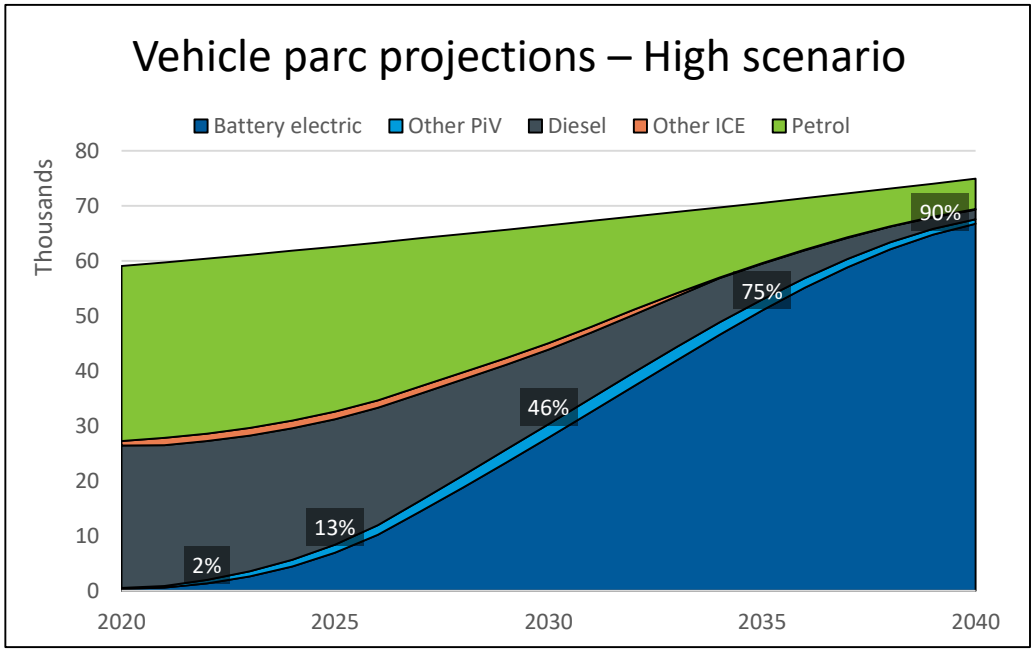
All scenarios project a significant increase in the proportion of vehicle sales which are EVs. This will lead to a steady growth in the number of electric cars and vans on the roads of East Lothian

1 - Government takes historic step towards net-zero with end of sale of new petrol and diesel cars by 2030 - GOV.UK (www.gov.uk)

Note: Electric refers to all PiVs, not just BEVs

Transport | Energy Infrastructure | Knowledge & Enterprise

Vehicle Parc Transition



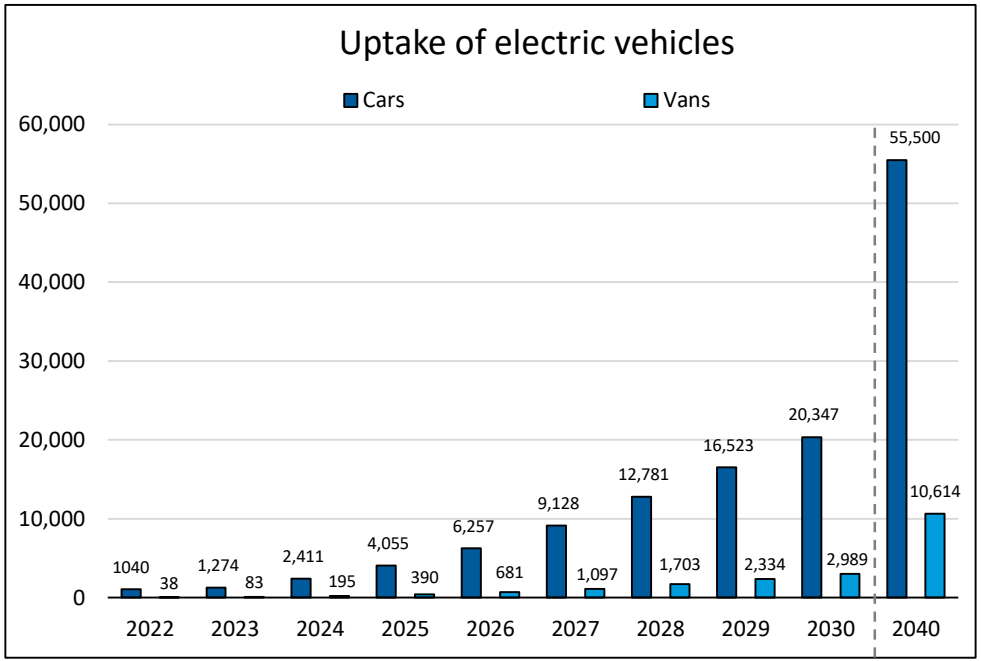
Given the leading position of ELC within the UK and Scotland's accelerated net zero target, ELC are looking to target the **High scenario**. Furthermore, planning on this scenario will put ELC in a better position to respond to increasing demand in this decade.

Using the values from this scenario, the proportion of the vehicle parc which is electric reaches around 90% by 2040 (below)

	2022	2025	2030	2040
EV Uptake	2%	13%	46%	**90%**

Petrol- and diesel-powered vehicles are all but eliminated from the vehicle parc by 2040, and projections suggest that all cars and vans may not be net-zero by Scotland's 2045 target date

Vehicle Parc Transition – By Vehicle Type



	Cars	Vans
2022 Q2 (actual)	1,040	38
2025	4,055	390
2030	20,347	2,989
2040	55,500	10,614

Under the High Scenario, the number of electric cars is expected to quadruple by 2025 and be a factor of 20 times larger by 2030.

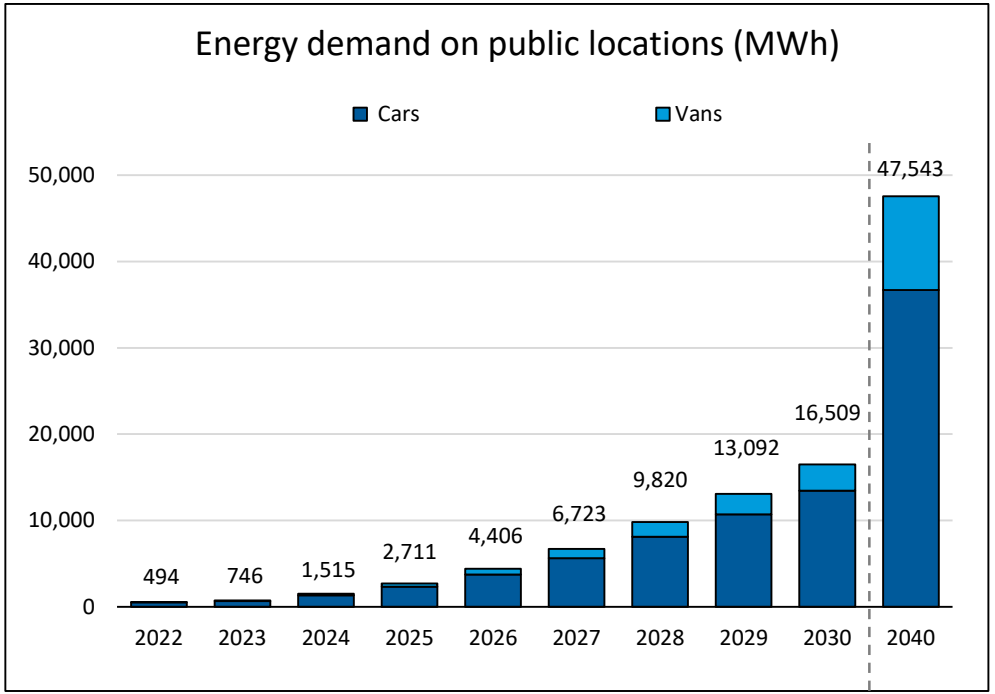
Number of electric vans is projected to be 10 times larger by 2025 and nearly 80 times by 2030.

The rate of transition will vary in absolute terms by vehicle type. Electric cars will be more numerous, but electric vans will grow at a greater rate due to a lower starting position

Note: Electric refers to all PiVs, not just BEVs

Transport | Energy Infrastructure | Knowledge & Enterprise

Energy Demand



(MWh)	Cars	Vans	Total
2022 Q2 (actual)	-	-	**494**
2025	2,342	369	**2,711**
2030	13,458	3,051	**16,509**
2040	36,709	10,834	**47,543**

Assuming current annual mileage trends[1] continue and there are no technological innovations in vehicle efficiencies, then energy demand at public chargers in the **high scenario** will grow roughly in proportion to EV uptake.

Energy delivered by public charging will grow by at least one order of magnitude by 2030

1 – There was a significant drop in the annual mileage of vehicles due to COVID. It is assumed that annual mileages will recover – as observed in the past two years – but not back to the levels seen before covid. This represents a 15% reduction in mileage by 2030 respect to 2019/2020 using SMMT data. There is a commitment to reduce vehicle mileage by 20% by 2030 by Transport Scotland, however, at present, there is no indication where this will come from (urban, rural, long Journey, commuter travel) and so has not been modelled here, but should be noted in the wider strategy.

Required EV Infrastructure - Utilisation

cenex

Current Utilisation

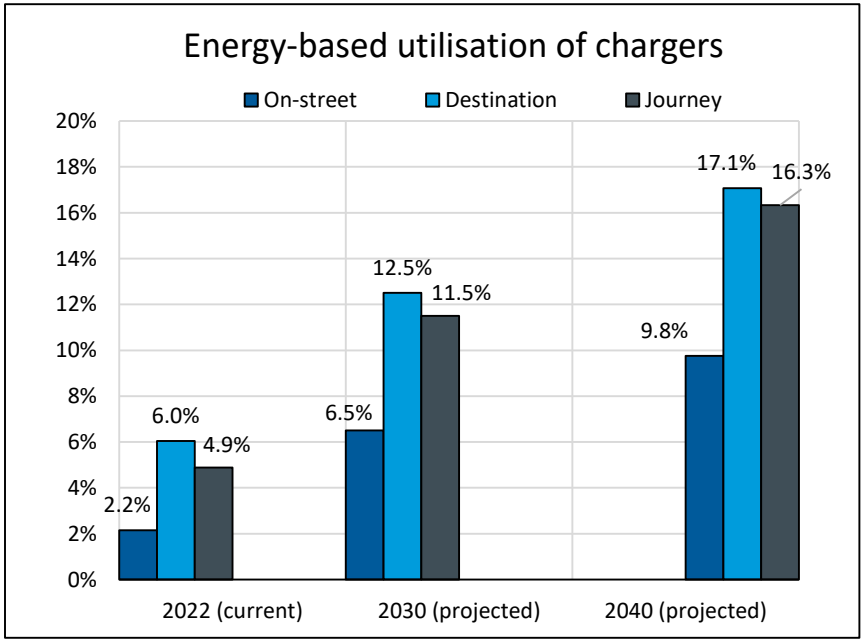
Utilisation is key to determining the performance of chargers; there has been a significant increase in utilisation since 2020

Projected Utilisation

The utilisation modelling used in this section assumes that it will continue to grow into the future.

- The maximum theoretical energy-based utilisation[1] for on-street chargers is near 13% - it has been assumed that half of this will be achieved in 2030.
- For Destination and Journey chargers, the average growth rate seen between 2021 and 2022 is halved and applied each year through to 2030 in the modelling that follows, resulting in utilisation in Destination and Journey chargers of 12.5% and 11.5% respectively in 2030.

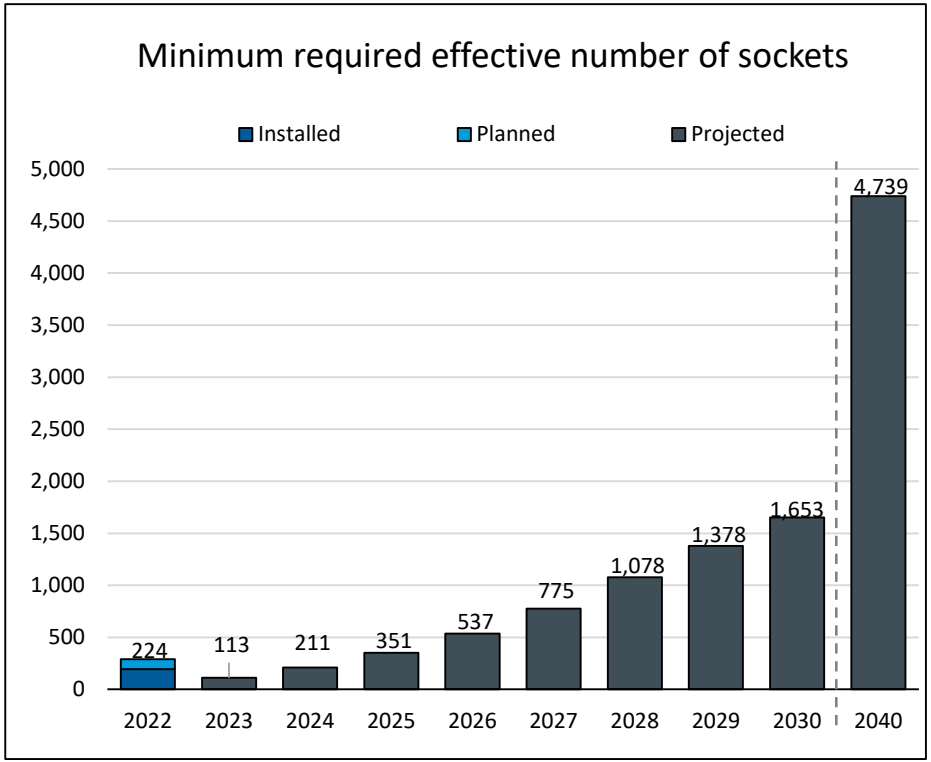
While it is impossible to predict the future, the roadmap to 2030 is considered to be reasonably accurate Thereafter there is less confidence in how utilisation will change though evidence suggests the general trends stated are accurate[2].



1 – Based on Cenex proprietary models, which take into account availability of chargers and availability of users to charge their vehicles (factors such as usual working hours or people not waking up at night to unplug their vehicles)
2 – For 2040 projections, utilisation is an average between a maximum and minimum values. The maximum assumes the same proportional growth between 2022 and 2030 occurs between 2030 and 2040, and the minimum assumes utilisation remains the same as in 2030. This would give an error band of around ±30% for all charging locations

Transport | Energy Infrastructure | Knowledge & Enterprise

Required EV Infrastructure



East Lothian Council has 224 installed and planned connectors confirmed, which can deliver up to 4 MW simultaneously (3.73 kW per EV). An additional 300 connectors are also planned through ORCS and Transport Scotland EVIF funding over the net 2-3 years[1].

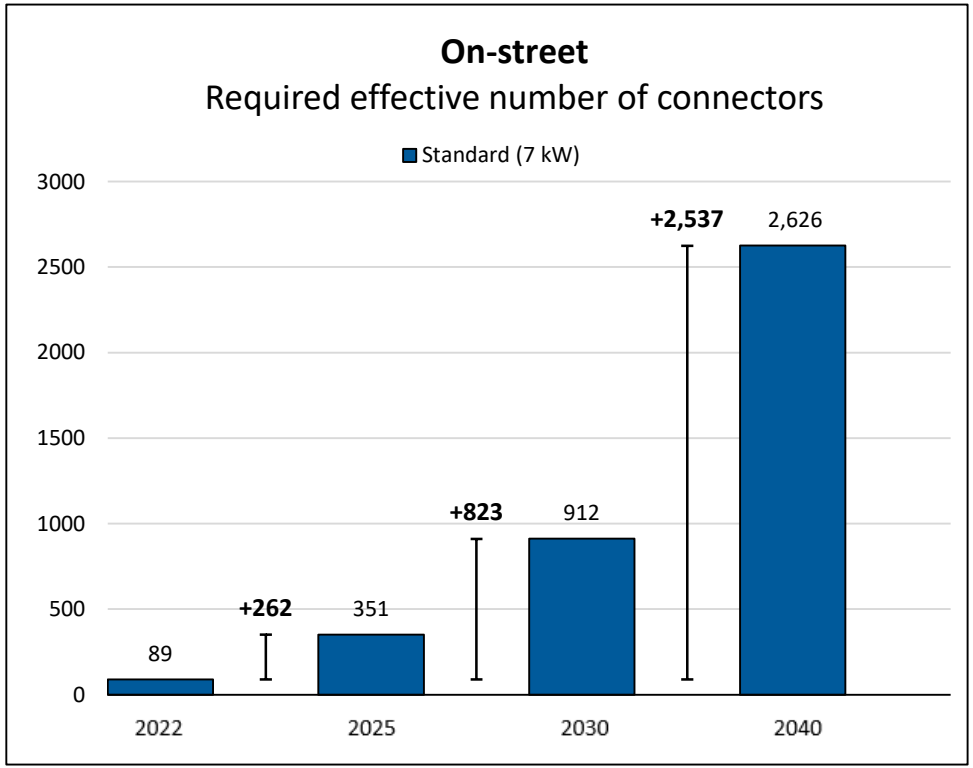
The figures for 2022 only include ELC assets, whereas the projected figures are for all the required effective number of connectors (ELC will not need to provide all of them).

	2022[2]	2025	2030	2040
Installed power	4 MW	5 MW	17 MW	49 MW

ELC is in a good position to deliver the electric energy demand from EVs for the next four years. To continue to have a leading EVI network ELC will need to ensure that at least 1400 new connectors (equivalent to an additional 13 MW above 2022 demand) are delivered by 2030[3].

1 – 100 in place by 31st March 2024 through ORCS, plus an additional 50 to be bid through ORCS. The remaining 150 through EVIF funding. Both grant funds will require at least 50% match funding from Concessionaires, or other methods
2 - Already installed or planned/funded
3 - Some of these connectors are expected to be deployed privately for public access (e.g., supermarkets, leisure facilities) however the demand for the majority of connectors is expected to be close to residential overnight parking

Required EV Infrastructure - On-Street



Given ELC's geography and socio-demographic characteristics, an on-street charging network is likely to be more effective than a hub model for residential charging.

At present all on-street chargers are standard 7kW[1].

Only 9.7% of the **On-street** chargers required by 2030 are already installed/planned

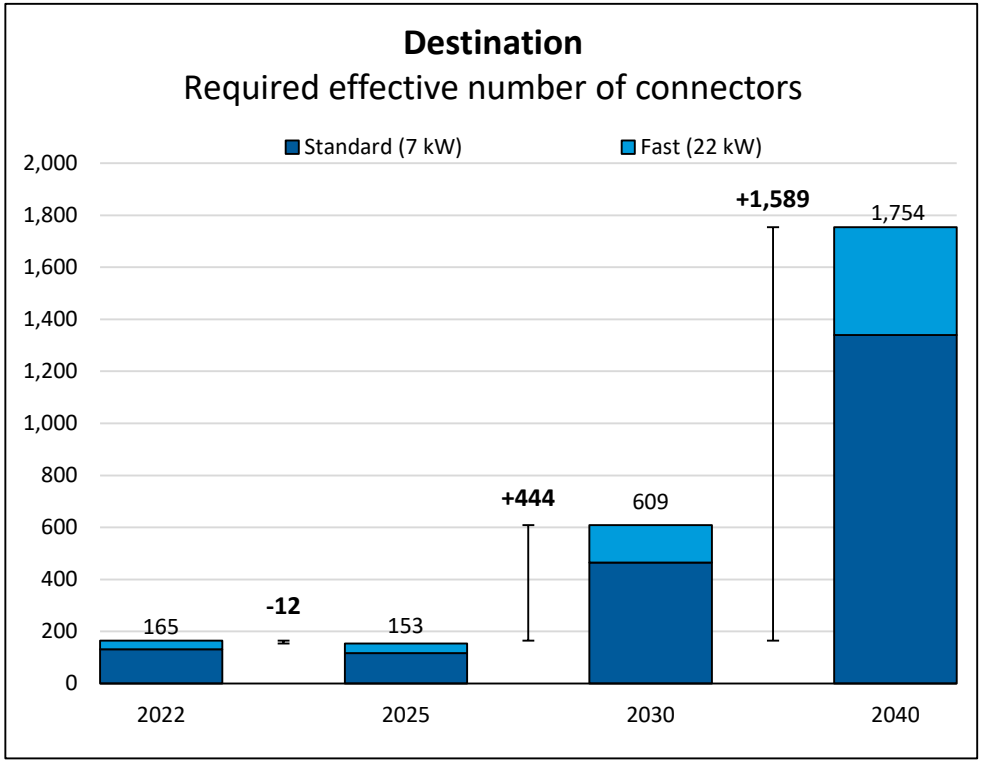
Gap	2025	2030	2040
Standard (7 kW)	262 connectors	823 connectors	2,537 connectors

Over 90% of the connectors required by 2030 for ELC to be successful are yet to be installed. ELC should focus on On-street provision to deliver an equitable residential charging infrastructure. The majority of On-street connectors are expected to be provided or facilitated by East Lothian Council, as Roads Authority.

1 - According to Cenex analysis of current ELC EVI (August 2022)

Transport | Energy Infrastructure | Knowledge & Enterprise

Required EV Infrastructure - Destination



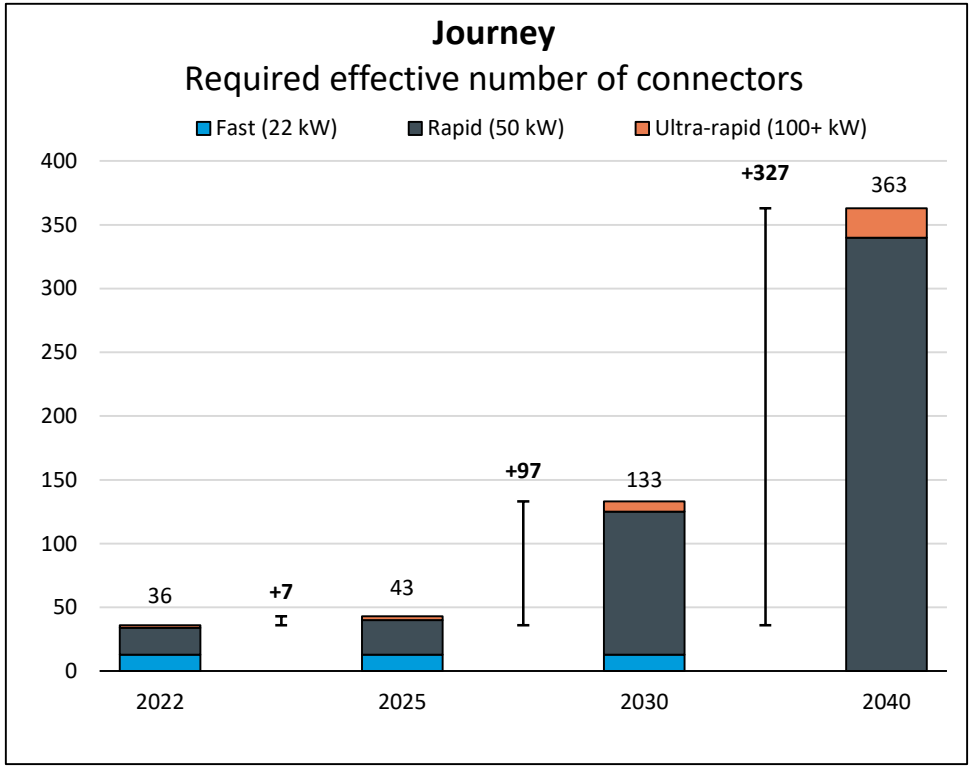
27% of all **Destination** chargers required in East Lothian by 2030 are already installed or planned.

At present, standard chargers (7kW) in Destination locations have 2 effective connectors, and fast chargers (22kW) also have 2 effective connectors.

Gap	2025	2030	2040
Standard (7 kW)	0 connectors	333 connectors	1,207 connectors
Fast (22 kW)	3 connectors	111 connectors	382 connectors

ELC already has good provision of Destination chargers. Nevertheless, over 400 new connectors will be required before 2030.
The majority of Destination connectors are expected to be provided privately, but for public access.

Required EV Infrastructure - Journey



27% of all **Journey** chargers required by 2030 are already installed or planned.

At present, 13 of the 50 kW chargers have one rapid 50 kW connector and one fast 22 kW connector[1]. The requirement for 22 kW connectors for Journey will not be needed in the future and it is assumed that these 13 22 kW connectors will be replaced post-2030.

Gap	2025	2030	2040
Rapid (50 kW)	6 connectors	91 connectors	319 connectors
Ultra-rapid (100+ kW)	1 connectors	6 connectors	21 connectors

Around 100 new Journey connectors will be required to deliver the electricity demand from EVs in 2030[2].
The majority of Journey charger connectors are expected to be provided privately, but for public access.

1 - According to Cenex analysis of current ELC EVI (August 2022)
2 - MFG, Eurogarages and Ionity already have plans to install up to 20 Journey devices at the moment

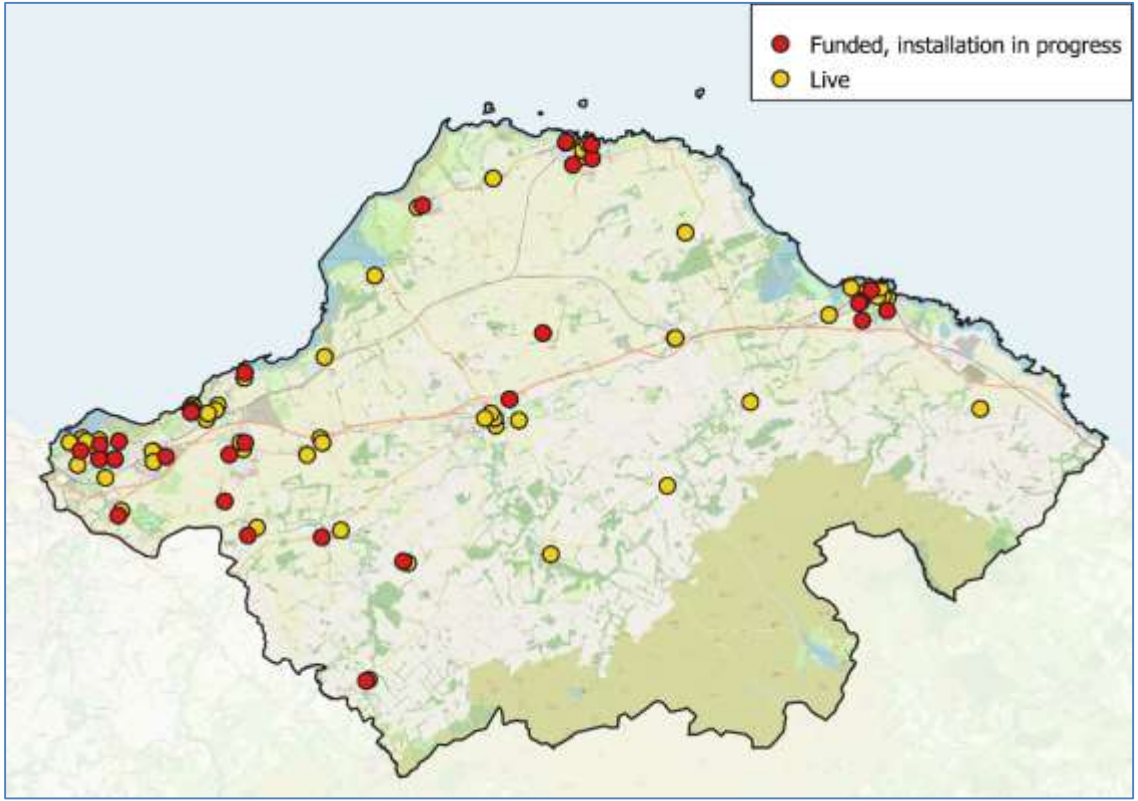
4. Deployment Priorities

Current Status

Key Areas for Deployment

Transport | Energy Infrastructure | Knowledge & Enterprise

Location of Charging Infrastructure – Current Status

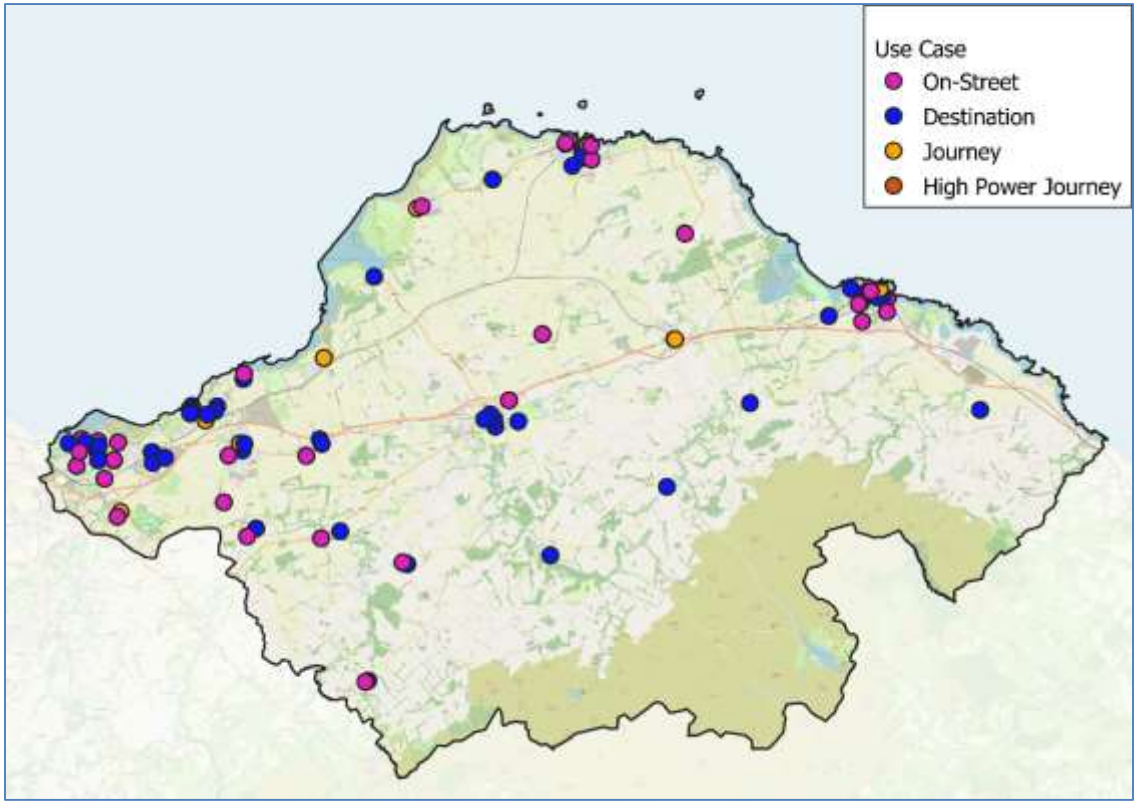


The location of live, installed and planned chargepoints was mapped to understand the distribution of current infrastructure.

This shows the extent of the existing ELC EVI estate (yellow), which is well-distributed across the region. The planned chargepoints (red) will improve provision in urban centres, as well as extending additional capacity.

The existing EVI estate is well developed

Location of Charging Infrastructure – Current Status



The existing estate was categorised by use-case:

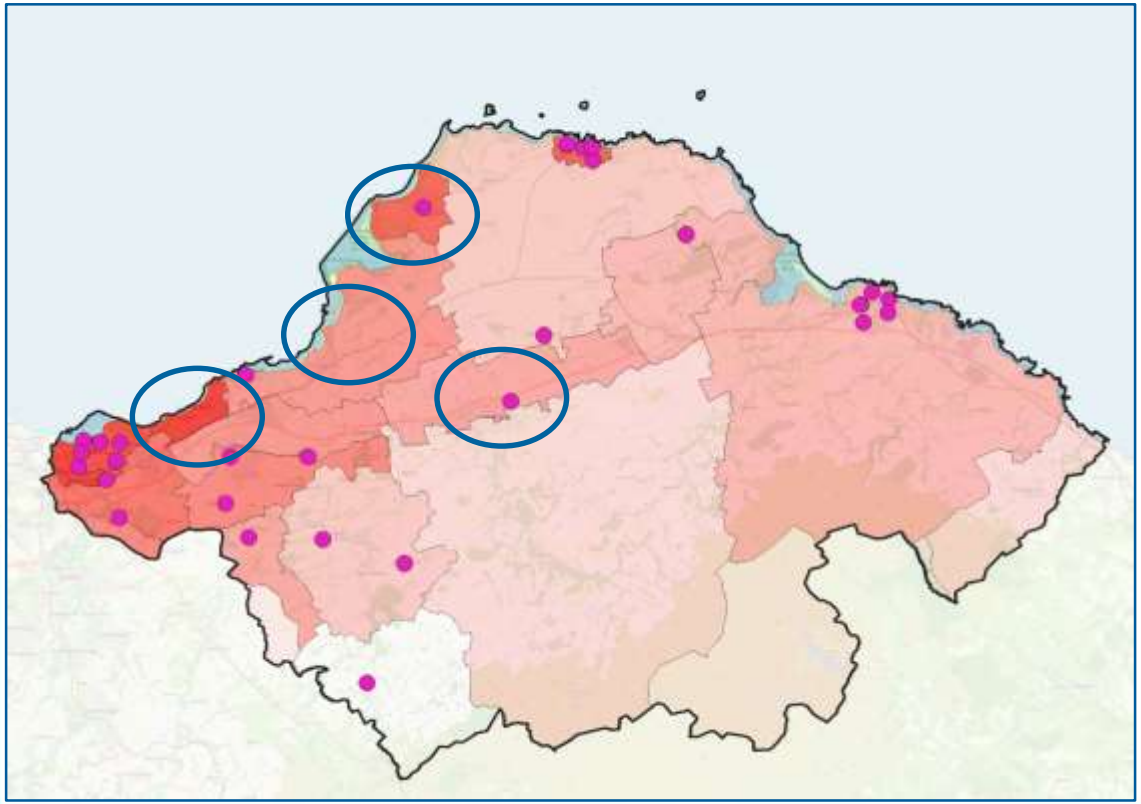
- On-street
- Destination
- Journey
- High-powered Journey

This shows the distribution of the different chargers across the East Lothian region with Journey chargers in the main towns and spaced out along the A1 corridor

The existing EVI estate is well developed and distributed

Transport | Energy Infrastructure | Knowledge & Enterprise

On-Street Deployment



On-Street Priority Areas

Currently installed and planned On-street EVI has been mapped against population density to identify key areas for future deployments.

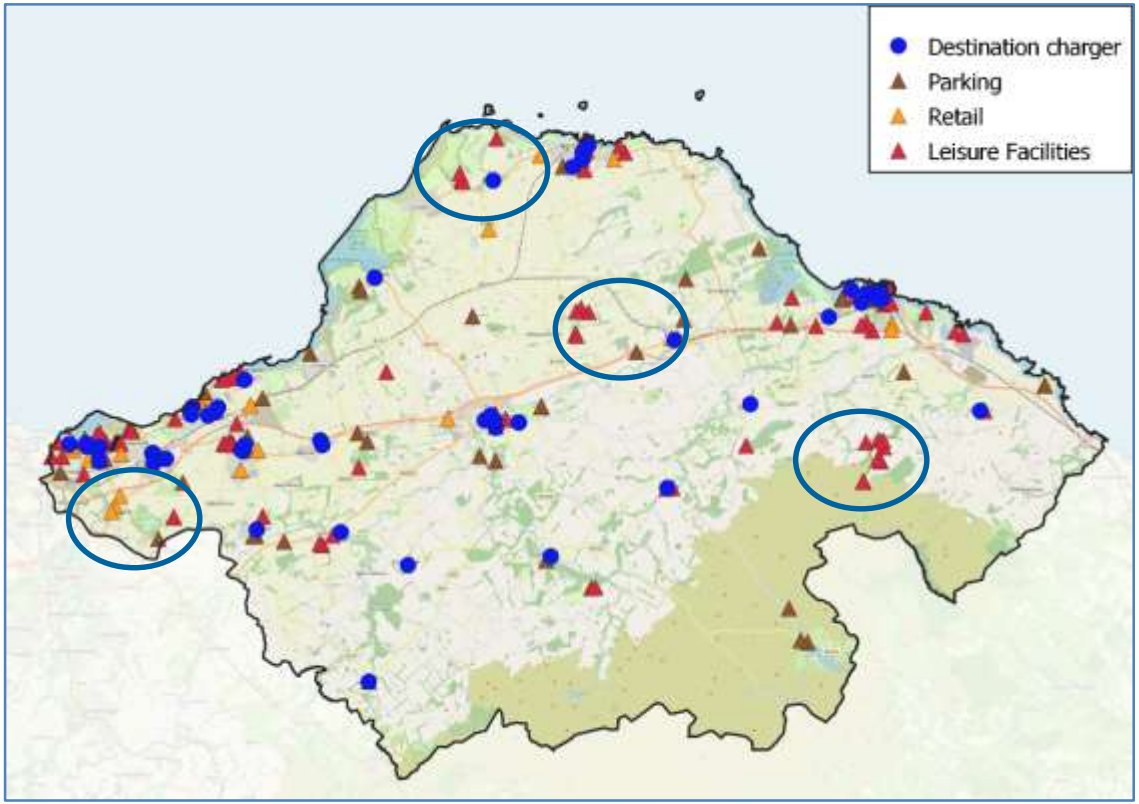
Areas where there is high density of population but a relatively low number of chargers have been identified as possible priority areas for deployments.

The majority of On-street connectors are expected to be provided or facilitated by East Lothian Council, as Roads Authority.

Currently underserved areas

Transport | Energy Infrastructure | Knowledge & Enterprise

Destination Deployment



Destination Priority Areas

Currently installed and planned Destination EVI has been mapped against existing parking, retail and leisure facilities to identify key areas for future deployments.

Areas with high concentrations of Destination sites but a relatively low number of chargers are highlighted as priority areas for upcoming installations.

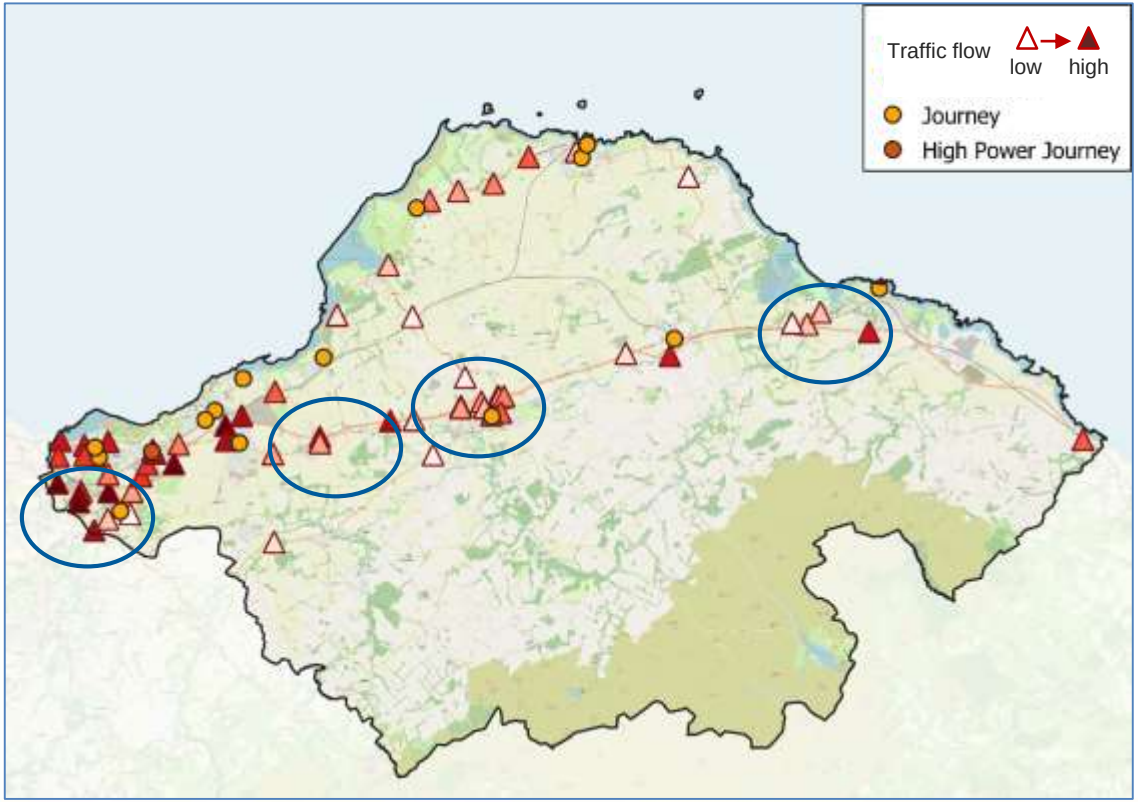
The majority of Destination connectors are expected to be provided privately, but for public access.

Currently underserved areas

Destination locations in this map represent possible deployment areas, not necessarily places where chargers will be installed. ELC will not need to be responsible for all of the deployments
Parking, retail and leisure facility locations have been generated from the Open Street Map database

Transport | Energy Infrastructure | Knowledge & Enterprise

Journey Deployment



Journey Priority Areas

Currently installed and planned Journey EVI has been mapped against traffic count to identify key areas for future deployments.

Areas with higher traffic flow but a relatively low number of chargers are highlighted as priority areas for upcoming installations.

The majority of Journey charger connectors are expected to be provided privately, but for public access.

Currently underserved areas

Based on available traffic count data (which may not cover all of the roads)

Transport | Energy Infrastructure | Knowledge & Enterprise

cenex

5. Commercial Arrangements

Incorporating the Existing Estate
Implications of 'Leverage Estate'
Indicative Investment

Incorporating the Existing Estate

Options Appraisal

Cenex completed an Options Appraisal on strategies that would allow for the continual and sustainable operation, maintenance, and expansion of the chargepoint network but with less reliance on dwindling grant-funding.

A range of Commercial Arrangements are seen in use in the UK market today:

Commercial Arrangements	Own and Operate	Public-Private Commercial Partnership		Joint Venture	Land Lease
Common Subsets		External Operator	Concession		
Distinguishing Features	Most involved option for the LA from all aspects. It may choose to sub-contract certain activities.	LA covers all aspects except for payment	Commercial Arrangements that are governed by CCR16, as well as lower values ones not technically under CCR16	A New Entity is formed.	Third party is a tenant

The ways to apply these Commercial Arrangements to current and future EVI were evaluated to establish five options:

1. Do Nothing – continue to **Own and Operate** existing EVI until decommissioning. Do not install future EVI.
2. Own and Operate – continue to **Own and Operate** existing and future EVI.
3. Part-sell Estate – **Land Lease** Journey EVI but continue to **Own and Operate** On-street and Destination EVI.
4. Leverage Estate – use existing EVI as a lever to secure preferential terms on a **Concession**.
5. Fully-sell Estate – sell all existing assets to a private operator and leave future deployments to the private market.

The *Leverage Estate* option was judged to best deliver ELC's priorities of accessibility, equitability, reduced investment, long-term revenue sourcing, council responsibilities and risk management

Implications of *Leverage Estate*

cenex

Procurement Implications

By using its leading position, large estate and energy-purchasing power, ELC will let Public-Private Commercial Partnership contracts with an **External Operator** element for existing EVI and **Concession** element for future EVI.

- This should be via a competitive tender to contract the CPOs;
- ELC will retain the ability to break the contracts if equitability outcomes were not achieved;
- At least two organisations should be sought to avoid exclusivity across On-Street, Destination and Journey charging;
- ELC will retain the right to install additional EVI in other locations without any constraints.

Regulation Implications

Any EVI installation must conform to product standards.
A minimum suite of regulations have been defined to maintain high standard and compliance.

Further details, assumptions and methods can be found in the Options Appraisal report

Implications of *Leverage Estate*

cenex

Contract Implications

A duration of seven years is targeted and should be a key topic of discussion in pre-tender market engagement.

This could be in the form of 5+2+2, to give ELC one option to exit early and one to extend.

It is recommended that a revenue-share model is adopted and profit-share is avoided

Responsibilities to deliver this commercial approach have been shared as shown in the table on the right.

Control is a primary driver of the recommended option, so the eventual contracts must explicitly outline what influence ELC has over:

- Technical specifications;
- Specific locations;
- Electricity purchase; and
- Tariff principles.

Responsibilities of EVI network	
Planning approvals	ELC
Grid connection	ELC
Groundworks from grid connection to feeder pillar	ELC
Feeder cabinet and meter	ELC
Groundworks to chargepoints	Supplier
Chargepoint Installation	Supplier
Operations	Supplier
Insurance	Supplier
Customer service	Supplier
Electricity purchase	ELC
Decommissioning	Supplier

Further details, assumptions and methods can be found in the Options Appraisal report

Transport | Energy Infrastructure | Knowledge & Enterprise

Implications of *Leverage Estate*

cenex

Governance Implications

Value for money is an important aspect so Service Level Agreements (SLAs) should be put in-place to ensure that the partner organisations are held to account and this strategy is delivered.

Suggested SLAs might include:

- Number of chargepoints by EVI type installed by a target date
- Percentage of EVI installed in the so-called Red, Amber and Green areas based on commercial viability (to be decided prior to tender)
- Percentage of equipment uptime (99% per individual chargepoint, going beyond the consumer experience at public chargepoints policy proposals)
- Percentage of network uptime (99% in line with the consumer experience at public chargepoints policy proposals)
- Percentage of charge events that result in a successful payment (99%)
- End-user tariffs remain at or below a fixed upper percentage tied to price of purchased electricity
- Proportion of customer service phone calls which are answered within 30s
- Proportion of customer service enquiries which are successfully answered

Details on **KPIs, Risks and Resourcing** are also presented with an outline project plan.

Further details, assumptions and methods can be found in the Options Appraisal report

Indicative Investment Required

Assumptions

Taking these aspects together, it is possible to calculate the total investment that ELC and its partners will need to make to deliver the number and types of EVI projected to be needed.

The table below outlines the input assumptions:

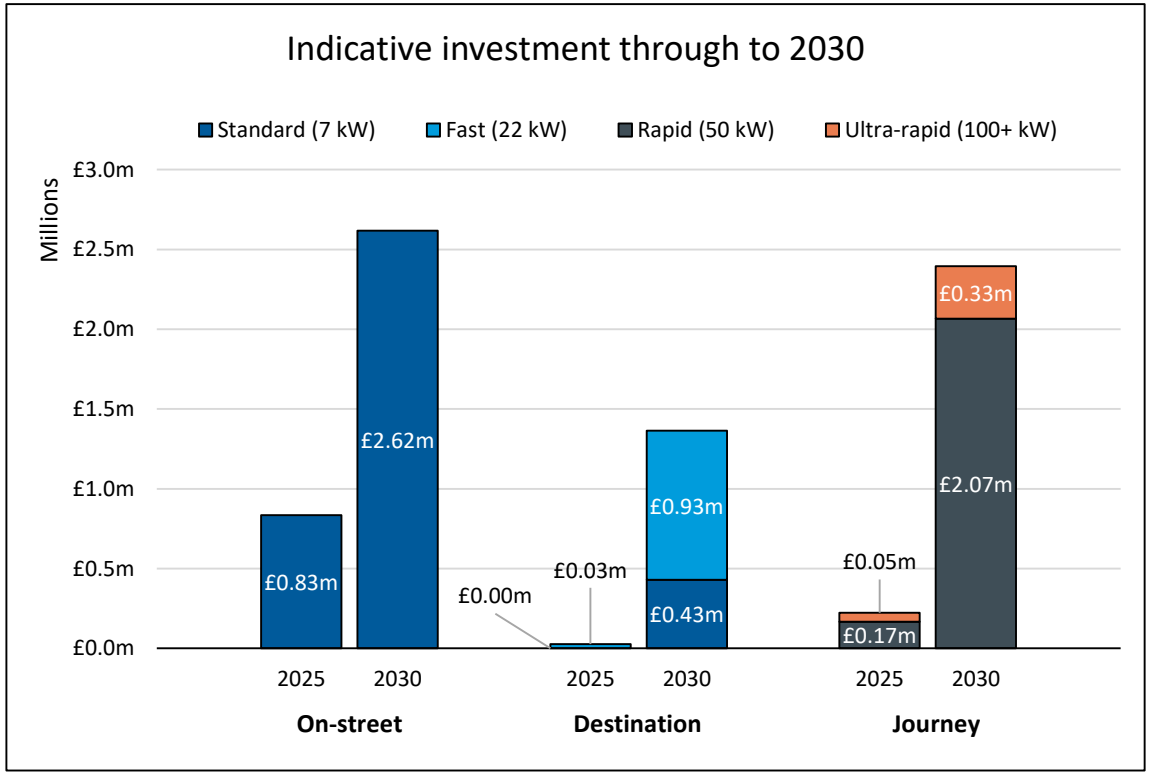
	On-street	Destination	Journey	High-Power Journey
Enabling works	£3,340			
Electrical connections	£1,580			Highly variable
Device	£1,850	£3,500	£23,000	£50,000
Total	**£6,770**	**£8,420**	**£27,920**	**£50,000+**

Note:

- Clearly the enabling works and electrical connections will vary significantly depending on the location, but are not dependant on the type of the device. Average values are used, regardless of chargepoint type.
- Some of the values in the table above are an average from four confidential industry quotes. The different cost of devices with different number of connectors is taken into account in the investment calculations that follow.

Transport | Energy Infrastructure | Knowledge & Enterprise

Indicative investment



	2025	2030
Investment	£1.2m	£6.5m

Investment

Given the current status of EVI, and the envisioned path through to 2030, on-street locations will require more investment in the near term, whereas Destination and Journey locations are already in a good position for 2025.

Around £6.5m capital will be required from public and private investors before 2030. ELC will not need to provide or facilitate all of the chargers (especially Journey chargers) as other commercial providers emerge[1].

1 - MFG, Eurogarages and Ionity already have plans to install up to 20 Journey devices at present

6. Strategy

ELC EVI Strategy

Benefits and Implications

Transport | Energy Infrastructure | Knowledge & Enterprise

ELC EVI Strategy

Taking the Current Status, Projection and Gap Analysis, Deployment Priorities, and Commercial Arrangements together, an outline strategy for East Lothian is proposed, which forms the basis for a full Strategy and Expansion Plan.

Summary

EV Excellence in East Lothian: leading the way towards net-zero by delivering the Scottish EV Infrastructure Vision for all its residents.

It will achieve excellence by:

- Extending the EVI programme by leveraging the existing estate;
- Ensuring a Just Transition by targeting provision into priority areas;
- Enhancing accessibility for everyone by setting minimum standards; and
- Enabling a reliable public EV charger network by monitoring performance.

Further details, assumptions and methods can be found in the Options Appraisal report

Transport | Energy Infrastructure | Knowledge & Enterprise

Benefits and Implications

Benefits

If successful and if EV uptake continues as projected, by 2030 this will deliver:

- ✓ A well-designed, comprehensive and people-focused public chargers network, consisting of:
  - ✓ Over 800 additional charging connectors for On-street applications;
  - ✓ Over 400 additional charging connectors for Destination applications; and
  - ✓ Over 100 additional charging connectors for Journey applications.
- ✓ An increase in the number of EVs on the roads of East Lothian to at least 45%.

Implications

If implemented in-full, this strategy is expected to require:

- ➢ The upgrade of significant parts of the DNO network to support more than 16 MW installed EVI capacity;
- ➢ Around £6.5m capital investment in chargers by both public and private operators; and
- ➢ The development of a range of commercial and local partnerships for co-delivery in priority areas.

Appendix 4

Risk Type	RISK TITLE	RISK CAUSE Description of the specific trigger that could make the risk happen	RISK EFFECT Description of the consequences of the risk, positive or negative	INHERENT RISK SCORE			CONTROLS that could be implemented to mitigate risk	RESIDUAL RISK SCORE		
				Impact	Probability	Total inherent risk score		IMPACT	Probability	Total residual risk score
Commercial	Electricity prices increase further	Global fuel shortages and energy policy	Reduced commercial opportunities in procurement, reduced profits for CPO - delayed break even point	5	8	40	Ensure energy price trends. Are monitored and use current LA energy contracts for a more stable supply cost.	4	8	32
Financial	Inability to secure sufficient private investment	Contract terms or sites are commercially unattractive	Reduction in project scope or requirement for additional council investment	10	4	40	Flexibility on terms and sites built into procurement. Early market engagement indicates offer is commercially attractive. Ensure commercially attractive sites are included with rural sites to support business case for investors. Ensure sufficient time is allowed for procurement to give CPOs enough time to put suitable offers together.	10	2	20
Financial	Lack of commercial interest in bidding for EVIs	Contract terms or sites are commercially unattractive	Reduction in project scope or requirement for additional council investment. Inability to deliver project. Poor offering from CPOs	7	5	35	Flexibility on terms and sites built into procurement. Early market engagement indicates offer is commercially attractive. Ensure commercially attractive sites are included with rural sites to support business case for investors. Ensure sufficient time is allowed for procurement to give CPOs enough time to put suitable offers together.	6	3	18
Commercial	Commercial partner/CPO pulls out of the project	Contract terms are unattractive or selected EVI sites are infeasible. Collapse of commercial partner/CPO business.	Additional procurement activity required - delay to programme delivery	8	3	24	Being flexible and having an ability to negotiate terms embedded in procurement process. Being Flexible with site selection. Ensuring robust financial due diligence from the start.	7	2	14

Managerial	Lack of key staff resource.	Project is dependent on a wide range of inhouse expertise across multiple departments to cover diverse work packages.	Losing access to this resource during the project period could delay project delivery.	6	5	30	Ensure expertise is well embedded in teams contributing through the project and not only with a sole member of staff in a department. Ensure deputy system is in place for all key staff, with consistent task management and tracking. Ensure home working arrangement are in place for all key staff in case of further lock downs. Employees encouraged to self-test for C19 and take up the offer of a vaccine. Continue to maintain covid controls.	3	4	12
Managerial	Delay in completion of milestones causes forward delays on dependent tasks	Inadequate time planned for delivery of work packages or tasks, external factors or unexpected complexities cause delays. Inadequate identification of dependencies or lag time allowed around interdependent tasks.	Delays to work packages or tasks have cumulative impact on timely delivery of project deliverables.	4	5	20	Ensure dependencies are mapped and highlighted in project plan. Build float into project plan around dependencies in case of delays.	3	4	12
Commercial	Charging tariffs offered by CPOs are too high	Energy costs or CPO business model sets charging tariffs above market rate	Poor utilisation of EVIs. EV drivers with lower incomes are excluded from EVI EVI scheme	6	5	30	Ensure procurement will include value for money tests - including value for money on tariffs. Procurement will include business model assessment for CPOS. Ongoing market assessment and flexibility in tariffs built into CPO contract.	3	4	12
Financial	Budget overrun	Inadequate budgeting or financial forecasting or unexpected costs	Reduction in project scope or requirement for additional private investment/council investment	6	4	24	Ensure soft market engagement is conducted and use actual costs from recent projects delivered in last financial year to allow for realistic budgeting and financial forecasting.	5	2	10

Financial	Prohibitive POC / substation upgrade costs	Unexpected/unknown complexities in DNO connection requirements. Lack of prior information regarding capacity at sites. Poor DNO records, Insufficient budget planned for DNO works	Reduction in project scope or requirement for additional private investment/council investment	6	5	30	All shortlisted sites reviewed for local substation capacity and distance from sites, and local LV network presence. Flexibility built into procurement to adjust site locations if costs are prohibitive. Reserve sites identified in case of requirement to adjust locations.	3	3	9
Political	Change of political administration	Change of political administration at the council or central government.	Possible change in council priorities. Additional resource requirements to deliver communications to new administration regarding project	5	3	15	Ensure that there is engagement across all political parties to secure cross party buy-in from outset.	3	3	9
Regulatory	Third party wayleaves not secured	Shortlisted site connections go across third party land and third parties do not agree to wayleave with DNO	Time and cost implications of processing third party wayleaves. Sites may not be able to progress if wayleave impossible to secure.	6	5	30	Review all sites and deprioritise sites where third party wayleave is likely to be required and/or early engagement with third parties if requirement is identified. Reserve list of sites in case of any requirement to drop a site.	4	2	8
Commercial	Supply chain issues	Worldwide shortages of key components	Worldwide shortages of components could delay delivery of EVIs	5	3	15	Understand the supply chain and lead times before commencement of project. Use learnings from the project to factor in any extended lead times to the project plan to ensure the project is delivered on time.	3	2	6
Communications	Important stakeholders are excluded from the communications plan and are not consulted on the project	Insufficient preparation and project communication	Reduced buy in from important stakeholders. Project may experience delays or make commitments which are not feasible	4	4	16	Engage in thorough researching of all potential stakeholders based on the project scope. Use of networks to identify teams, individuals or organisations who may be impacted by/have interest in the project.	3	2	6
Communications	Lack of public engagement with relevant communities	Insufficient preparation and project communication	Reduced buy in from public/negative public reaction to project	3	4	12	Develop communication plan. Research external stakeholders. Deliver on communication plan to ensure engagement and notifications of works are timely and effective.	2	3	6

Financial	Materials/parts/labour cost Increases	Cost of parts or materials across one or both workstream increases.	Reduction in project scope or requirement for additional private investment/council investment	4	3	12	Ensure soft market engagement is conducted and use actual costs from recent projects delivered in last financial year to allow for realistic budgeting and financial forecasting. Identify any areas where DNO connections may be more complex/costly. Additional costs built in to account for price increases in key areas.	3	2	6
Managerial	Loss of key staff resource at contractors/subcontractors	Project will require regular input from external organisations and subcontractors and key staff working on the project may leave these organisations.	Losing access to this resource during the project period could delay project delivery.	4	3	12	Require subcontractors to identify adequate staffing resource and contingency if current staff leave as well as Covid mitigation packages on contracting. Also identify fall-back contractors in case of major impact prior to project commencement, hold contingency to allow recontracting if required, identify in-house capabilities where existing as a fall back.	3	2	6
Accessibility	Compromised accessibility - EVI	Lack of appropriate accessible EVIs at EVI sites	Blue badge holders are excluded or feel excluded from EVI sites	5	3	15	EVI procurement specifications include requirements for consideration of blue badge holders and accessible technologies future proofed to meet upcoming PAS 1899:2022 regulations	3	2	6
Accessibility	Compromised Accessibility - parking bays	Lack of appropriate accessible charging bays at EVI sites	Blue badge holders are excluded or feel excluded from EVI sites	5	3	15	EVI procurement specifications include requirements for consideration of blue badge holders and future proofing for increased blue badge use - i.e. including minimum % of bays with blue badge standard bay sizing and layout across estate and conversion of % of existing blue badge bays and ensure compliance with PAS 1899:2022	3	2	6

Commercial	EVI land third party agreements - leaseholders/landowners don't agree to EVI installation	Leaseholders or landowners at EVI sites involving a third party are not agreeable to EVI construction	A site may not be taken forward or delays in signing off agreements	6	3	18	Ensure communication plan includes communication with every site third party. Early engagement with leaseholders indicates parties at shortlisted sites are amenable to EVI installation. Shortlisting avoids any third party owned land.	3	2	6
Health & Safety	Perception of lack of overnight safety of EVSE users	Poor selection of sites with high crime prevalence or insufficient lighting. Lack of local engagement with public about feelings of safety at sites. Poor install/site design not taking safety perception into account.	Lack of use of EVI for target overnight charging. Sites become commercially unsuccessful.	4	3	12	Ensure site shortlisting process includes review of crime statistics in local area of EVI sites - high crime areas ranked lower in shortlist. Lighting review built into site design process.	3	2	6
Managerial	Major project decision sign off delays	Complex or slow council governance processes	Site plans, contracts or legal arrangements not signed off in timely fashion - delays to delivery	4	3	12	Ensure there is close engagement with council teams and that project plan identifies major sign offs so that relevant officers are aware of their responsibilities.	3	2	6
Technical	Delays to receiving POC quotes	DNO resourcing means there are delays in processing POC applications, insufficient information provided with POC application. Network complexities at POC site.	Delays to installation and delivery of POC connection.	4	3	12	Ensure there is early engagement with DNOs regarding potential shortlist sites. Use of DNO data to identify any potential complexities are identified as far as possible prior to application. Build in additional float time around POC to manage impact of possible delays. Regular monitoring of dependencies.	3	2	6
Technical	Delays to POC completion	DNO resourcing means there are delays in delivering POC works	Delays to installation and delivery of POC connection.	4	3	12	Ensure there is early engagement with DNOs. Encourage CPOs to consider use of ICPs for contestable POC works to build in flexibility.	3	2	6
Communications	Lack of communication to senior staff or councillors on project	Communication regarding project is not efficient - stakeholders are missed.	Senior staff or councillors are unaware of key information about project and approval dates are missed	4	3	12	Develop project communications plan. Ensure that Project Board members are aware of their responsibilities.	3	2	6

Communications	Negative reaction from stakeholders/communities not included in EVI roll-out	Limited rollout of EVI possible within project scope - some locations not currently being selected. Lack of engagement with stakeholders/lack of promotion of EVI rollout.	Negative PR, negative reaction from residents and communities, additional resource required to respond to complaints, reputational damage	4	3	12	Communicate clearly and promote the roll-out of EVI indicating why EVI is only being installed in specific areas.	3	2	6
Environmental	Adverse Weather Delays	Adverse weather conditions may affect the installation EVI	Delays to delivery programme	4	3	12	ensure float time is built into project plan for any delivery periods over winter months.	3	2	6
Legal	Party wall challenges	Party wall owners at EVI sites may challenge party wall notices.	Challenges could delay start to those carparks and impact the programme	4	3	12	Ensure communication plan includes communication to residents in the region of EVI to understand concerns prior to any shortlisting of sites. Due diligence process to include party wall searches at all shortlisted sites. Where party walls are found, site design will seek to locate EVIs away from party walls. Party wall noticing period build into project plan.	3	2	6
Operational	ICE blocking of car parking spaces	ICE vehicles block EVI spaces once live deliberately or due to poor signage/lining	EV drivers cannot access EVIs, poor utilisation of EVIs and damage to commercial sustainability	4	6	24	Ensure there is clear lining and signage consistent with existing lining/signage at EVI sites. TROs to be implemented where required to allow enforcement route. Actively enforcement at all sites from launch dates.	2	3	6
Communications	Negative reaction from local communities/neighbouring households	Lack of consultation or engagements with highly relevant stakeholder communities/group	Reputational damage, possible delays, additional staff resource to manage complainants.	3	3	9	Engagement local residents early in the process regarding sites - ensure consultation is carried out at appropriate time.	3	2	6
Managerial	Scope creep	Insufficiently defined scope	Project is ill-defined, too broad and not deliverable. Project is not delivered in a timely manner.	5	3	15	Ensure that the scope is agreed with internal stakeholders and commercial partners. Scope should be signed-off internally by project sponsor, and externally via project board. Any potential additions to the scope are monitored by the Project and escalated to the project board which should then result in a project change request.	3	2	6

Environmental	Covid lockdown impacting installations	A covid lockdown may reduce staff available for installations or pause installations for an extended period - risk increased over autumn winter	Delays to delivery programme	5	1	5	Ensure float is built into project plan. Additional time to be identified to enable the project team to bring installations forward or delay if a severe lockdown is anticipated.	4	1	4
Managerial	Internal decision making process delays progression	Delays in decision making and receiving approval amongst councils causes inertia and affects progression through the work packages.	Delayed delivery	3	3	9	Ensure a Decision Making Process for all parties to be defined in the PID. Change Management and Media Release processes are also to be defined. These processes will be monitored by the PM and early corrective action will be taken if lag is observed.	2	2	4
Managerial	Inaction of internal teams/ external organisations	Inaction of teams/organisations cause delays in progression,	Negative impacts on timely milestone completion and impacting dependent tasks.	3	3	9	Ensure dependencies on external teams/organisations are monitored. Mitigation plans for each dependency should be developed in advance of inaction arising.	2	2	4
Managerial	Legal delays	Lack of legal staff resource	Delays to processing legal and contract documentation, land leases, wayleaves etc.	3	3	9	Ensure there is early engagement with legal teams on project requirements and timelines. Dependencies on legal team identified and should be monitored. External teams/orgs to be provided with deadlines to agree to and made aware of project dependencies.	2	2	4
Regulatory	Archaeology restrictions	Shortlisted sites are archaeologically sensitive	Requirement for archaeological watching brief - cost and time implications for construction. Unexpected archaeological finds on site during installation	3	3	9	Early engagement during shortlisting with archaeological services re archaeological sensitivity of sites. Make CPO contractor aware of findings during procurement. Archaeology procedures from CPOs to be included in pre-mobilisation packs for sign off.	2	2	4
Regulatory	Flood risk	Shortlisted sites are impacted by flooding	Requirements for flooding/drainage mitigations - additional cost and time implications for construction.	3	3	9	Ensure early engagement during shortlisting with flooding officers re flooding status of sites. Make CPO contractor aware of findings during procurement.	2	2	4

Regulatory	Contaminated land	Shortlisted sites are impacted by contaminated land	Requirements for contaminated land mitigations - additional cost and time implications for construction.	3	3	9	Ensure there is early engagement during shortlisting with contaminated land officers re contaminated land status of sites. Make CPO contractor aware of findings during procurement.	2	2	4
Technical	Loss of POC	Delays to acceptance of POC mean capacity is allocated to another applicant, or multiple POCs from difference organisations mean that a priority list is implemented by DNO.	POC must be re-applied for - adding a delay to progressing the site. May have cost implications if capacity is allocated to another organisation and an upgrade to substation required or use of an alternative substation further away from POC is required.	5	2	10	Ensure there is early engagement with DNOs regarding potential shortlist sites. Project plan builds in sufficient time to action POC requests. Regular monitoring of dependencies.	4	1	4
Commercial	Changes in technology	If new energy sources are introduced to the market or if different technologies are developed i.e. Hydrogen or induction charging	Conductive EV charging market size may be reduced	4	1	4	Whilst hydrogen powered vehicles will become available, industry suggests that they will be less prevalent in cars and vans which are the focus of this project and although other charging technologies are available and being developed these technologies are unlikely to be commercially viable or widespread within 10 years.	4	1	4
Health & Safety	Trips caused by charging cable	Pedestrians may trip over EV charging cable if cable extending from over footway or road surface. Potential for damages claims.	Injury to staff or the public. Damages claim against LA	3	3	9	Ensure sufficient guidance is provided on how to safely use EVI and that all standards and regulations are met. Ensure sufficient insurance is held by the risk owner for any injuries.	2	2	4
Political	Councillors do not support project or object to project decisions	Insufficient engagement and communication with councillors	Delays to delivery programme, additional resource demands for extra communications activities	3	2	6	Ensure that a communication plan is developed and that councillors are briefed on project plans and support is confirmed. Regular member updates on project progress and decisions.	3	1	3
Managerial	Procurement delays	Unexpected complications or delays in procurement process	Start of delivery delayed	3	2	6	Ensure early engagement with procurement team to understand and mitigate any challenges with procurement.	3	1	3

Health & Safety	Construction works risks	Workers or passers-by may be injured by unsafe construction equipment, processes or materials	Injury or death to staff or the public. Damages claim against LA	6	3	18	Ensure a site specific risk assessment is carried out for all installation locations. All installations must comply with CDM, Health & Safety at Work Act, NRWSA and all other relevant regulations and standards. Ensure all parties involved hold relevant insurance.	2	1	2
Health & Safety	Electric shock	Faulty or inappropriate EV charging equipment may expose users to electric shocks. Damaged EV charging cable could electrify EVI.	User or pedestrian could receive electric shock or burns via EVI. Damages claim against LA.	5	2	10	Ensure sufficient guidance is provided on how to safely use EVI and that all standards and regulations are met. Ensure sufficient insurance is held by the risk owner for any injuries.	2	1	2
Health & Safety	Works on the highway	Additional risk to workers or passers by related to works on the highway.	Risk of vehicle strike leading to serious injury or death. Damages claim against LA	5	2	10	A site specific risk assessment to be carried out for all installation locations. All installations to comply with CDM, Health & Safety at Work Act, NRWSA and all other relevant regulations and standards. Where works obstruct the public footway, appropriate signage and barriers are to be used. Parking suspension orders must be used to allow appropriate access to site for construction workers. Ensure all parties involved hold appropriate PLI.	2	1	2
Financial	Damages claim	Health & Safety Incident leads to claim for damages	Financial burden to Local Authority and/or CPO	5	2	10	Ensure robust health and safety, safety testing and installation processes are conducted to mitigate against incidents occurring. Contracts include requirement for appropriate contractor PLI.	2	1	2
Health & Safety	Electrical Fire	Faulty EV charging equipment or inappropriate EV charging equipment may expose users to electric shocks or burns, or cause fires.	Injury or death to staff or the public. Damages claim against LA.	5	2	10	Ensure sufficient guidance is provided on how to safely use EVI and that all standards and regulations are met. Ensure sufficient insurance is held by the risk owner for any injuries.	2	1	2

Communications	Communications clash with purdah/other major comms/news	Insufficient review of upcoming events during comms planning	Lack of media pick up - delayed communications	4	3	12	Develop communications plan to highlight purdah periods during project. Ensure regular communication with internal comms teams to identify any major comms/news release dates in advance.	1	2	2